IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: J. Bednorz et al.

Date: December 15, 1998

Serial No. 08/303,561

Group Art Unit: 1105

Filed: September 9, 1994

Examiner: M. Kopec

For: NEW SUPERCONDUCTIVE COMPOUNDS HAVING HIGH TRANSITION TEMPERATURE, AND METHODS FOR THEIR USE AND PREPARATION

The Commissioner of Patents and Trademarks
Washington, D.C. 20231

AFFIDAVIT UNDER 37 CFR 1.132

Sir:

I, James W. Leonard, being duly sworn, do hereby depose and state:

I received a A.B. degree in Physics from the University of California at Santa Barbara (1962), and a M.S. and PhD. degree in Physics (1968) from the University of Oregon, Eugene, and an M.L.S. in Library Science from the University of Western Ontario (1972), London.

I have worked as a science librarian in the Thomas J. Watson Research Center from 1978 to the present. On December 2, 1998, I did a citation search in the SciSearch database on the Dialog on line system of the article J. G. Bednorz and K. A. Muller, Zeitschrift fur Physik B- Condensed Matter, **64** , pp. 189-193 (Sept. 1986). The result

of that search is below. There are a total of 5689 articles which refer to 1986 article of Bednorz and Muller: 1 in 1986, 839 in 1987, 1163 in 1988, 793 in 1989, 594 in 1989 and the remainder in the years from 1990 to the present.

SEARCH RESULTS

```
SYSTEM:OS  - DIALOG OneSearch
  File 434:SciSearch(R) Cited Ref Sci  1974-1989/Dec
         (c) 1998 Inst for Sci Info
  File  34:SciSearch(R) Cited Ref Sci  1990-1998/Nov W4
         (c) 1998 Inst for Sci Info

Set     Items   Description

S1       5689   CR=BEDNORZ JG, 1986, V64, P189, ?

S2          1   S1 AND PY=1986

S3        839   S1 AND PY=1987

S4       1163   S1 AND PY=1988

S5        793   S1 AND PY=1989

S6        594   S1 AND PY=1990
```

By: James W. Leonard
James W. Leonard

Sworn to before me this 15 day of December, 1998.

Notary Public

DANIEL P. MORRIS
NOTARY PUBLIC State of New York
No. [illegible]8676
Qualified in Westchester County
Commission Expires March 16, 1999

COPPER OXIDE SUPERCONDUCTORS

Charles P. Poole, Jr.
Timir Datta
Horacio A. Farach

with help from

M. M. Rigney
C. R. Sanders

Department of Physics and Astronomy
University of South Carolina
Columbia, South Carolina

WILEY
A Wiley-Interscience Publication
JOHN WILEY & SONS
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A1

Library of Congress Cataloging in Publication Data:

Poole, Charles P.
Copper oxide superconductors · Charles P. Poole, Jr., Timir Datta,
and Horacio A. Farach: with help from M. M. Rigney and C. R. Sanders.
p. cm.

"A Wiley-Interscience publication."
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Includes index.

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QC611.98.C64P66 1988
539.6'23-dc 19 88-18569 CIP
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Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

A2

PREFACE

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The field of high-temperature superconductivity is still evolving, and some ideas and explanations may be changed by the time these notes appear in print. Nevertheless, it is helpful to discuss them here to give insights into work now in progress, to give coherence to the present work, and to provide guidance for future work. It is hoped that in the not too distant future the field will settle down enough to permit a more definitive monograph to be written.

A3

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CHARLES P. POOLE, JR.
TIMIR DATTA
HORACIO A. FARACH

Columbia, South Carolina
July 1988

A4

ects of the BCS theory, however,

id detailed treatment of the prop-
see the extent to which they con-
ey agree with some of the other
n these two chapters.

V

PREPARATION AND CHARACTERIZATION OF SAMPLES

A. INTRODUCTION

Copper oxide superconductors with a purity sufficient to exhibit zero resistivity or to demonstrate levitation (Early) are not difficult to synthesize. We believe that this is at least partially responsible for the explosive worldwide growth in these materials. Nevertheless, it should be emphasized that the preparation of these samples does involve some risks since the procedures are carried out at quite high temperatures, often in oxygen atmospheres. In addition, some of the chemicals are toxic, and in the case of thallium compounds the degree of toxicity is extremely high so ingestion, inhalation, and contact with the skin must be prevented.

The superconducting properties of the copper oxide compounds are quite sensitive to the method of preparation and annealing. Multiphase samples containing fractions with T_c above liquid nitrogen temperature (Monec) can be synthesized using rather crude techniques, but really high-grade single-phase specimens require careful attention to such factors as temperature control, oxygen content of the surrounding gas, annealing cycles, grain sizes, and pelletizing procedures. The ratio of cations in the final sample is important, but even more critical and more difficult to control is the oxygen content. However, in the case of the Bi- and Tl-based compounds, the superconducting properties are less sensitive to the oxygen content.

Figure V-1 illustrates how preparation conditions can influence superconducting properties. It shows how the calcination temperature, the annealing time, and the quenching conditions affect the resistivity drop at T_c of a BiSrCaCuO pellet, a related copper-enriched specimen, and an aluminum-doped coun-

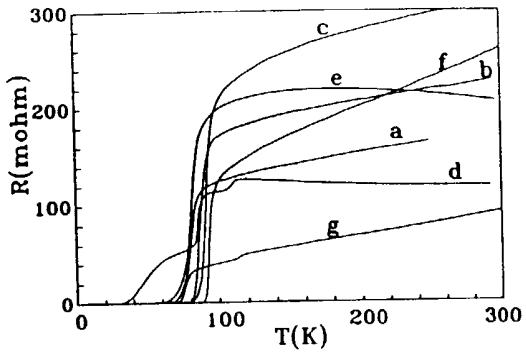


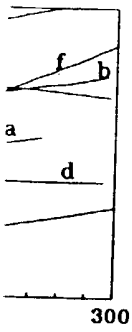
Fig. V-1. Effects of heat treatments on the resistivity transition of $BiSrCaCuO_{7-\delta}$ (*a*) calcined at 860°C, (*b*) calcined at 885°C, (*c*) calcined at 901°C, (*d*) aluminum-doped sample calcined at 875°C, prolonged annealing, (*e*) copper-rich sample calcined at 860°C, (*f*) aluminum-doped sample calcined at 885°C, slow quenching and (*g*) calcined at 885°C, prolonged annealing, and slow quenching (Chuz5).

terpart (Chuz5). These samples were all calcined and annealed in the same temperature range and air-quenched to room temperature.

Polycrystalline samples are the easiest to prepare, and much of the early work was carried out with them. Of greater significance is work carried out with thin films and single crystals, and these require more specialized preparation techniques. More and more of the recent work has been done with such samples.

Many authors have provided sample preparation information, and others have detailed heat treatments and oxygen control. Some representative techniques will be discussed.

The beginning of this chapter will treat methods of preparing bulk superconducting samples in general, and then samples of special types such as thin films and single crystals. The remainder of the chapter will discuss ways of checking the composition and quality of the samples. The thermodynamic or subsolidus phase diagram of the ternary Y–Ba–Cu oxide system illustrated in Fig. V-2 contains several stable stoichiometric compounds such as the end-point oxides Y_2O_3, BaO, and CuO at the apices, the binary oxides stable at 950°, (Ba_3CuO_4) Ba_2CuO_3, $BaCuO_2$, $Y_2Cu_2O_5$, $Y_4Ba_3O_9$, Y_2BaO_4, and ($Y_2Ba_4O_7$), along the edges, and ternary oxides such as ($YBa_3Cu_2O_7$), the semiconducting green phase Y_2BaCuO_5, and the superconducting black solid $YBa_2Cu_3O_{7-\delta}$ in the interior (Beye2, Bour3, Capo1, Eagl1, Frase, Hosoy, Jone1, Kaise, Kurth, Kuzz1, Leez3, Lian1, Mali1, Schni, Schn1, Schu1, Takay, Torra, Wagne). Compounds in parentheses are not on the figure, but are reported by other workers. The existence of a narrow range of solid solution was reported (Panso), and then argued against (Wagne) by the same group.



ransition of $BiSrCaCuO_{7-\delta}$ (*a*) t 901°C, (*d*) aluminum-doped pper-rich sample calcined at ow quenching and (*g*) calcined 1z5).

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done with such samples.
ı information, and others
Some representative tech-

preparing bulk supercon-
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modynamic or subsolidus
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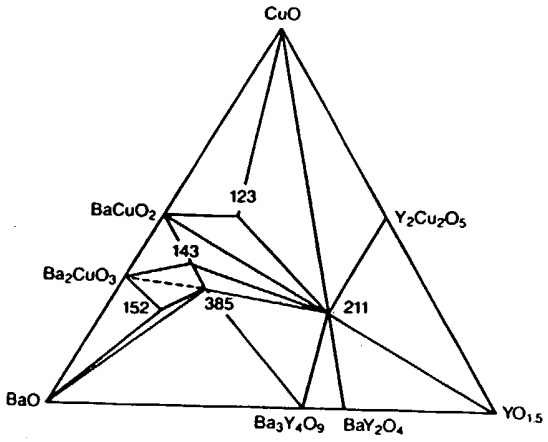
as the end-point oxides
table at 950°, (Ba_3CuO_4),
nd ($Y_2Ba_4O_7$), along the
niconducting green phase
$Ba_2Cu_3O_{7-\delta}$ in the interior
l, Kaise, Kurth, Kuzzz,
rra, Wagne). Compounds
d by other workers. The
orted (Panso), and then



Compound	Slowly cooled to room temperature
123 - $YBa_2Cu_3O_{6.5+\delta}$	O_7
143 - $YBa_4Cu_3O_{8.5+\delta}$	O_9
385 - $Y_3Ba_8Cu_5O_{17.5+\delta}$	O_{18}
152 - $YBa_5Cu_2O_{8.5+\delta}$	O_9
211 - Y_2BaCuO_5	
$Ba_2CuO_{3+\delta}$	$O_{3.3}$

Fig. V-2. Ternary phase diagram of the Y_2O_3–BaO–CuO system at 950°C. The green phase [Y_2BaCuO_5, (211)] the superconducting phase [$YBa_2Cu_3O_{7-\delta}$, (123)], and three other compounds are shown in the interior of the diagram (DeLee).

B. METHODS OF PREPARATION

In this section three methods of preparation will be described, namely, the solid state, the coprecipitation, and the sol–gel techniques (Hatfi). The widely used solid-state technique permits off-the-shelf chemicals to be directly calcined into superconductors, and it requires little familiarity with the subtle physicochemical processes involved in the transformation of a mixture of compounds into a superconductor. The coprecipitation technique mixes the constituents on an atomic scale and forms fine powders, but it requires careful control of the pH and some familiarity with analytical chemistry. The sol–gel procedure requires more competence in analytical procedures.

In the solid-state reaction technique one starts with oxygen-rich compounds of the desired components such as oxides, nitrates, or carbonates of Ba, Bi, La, Sr, Tl, Y, or other elements. Sometimes nitrates are formed first by dissolving oxides in nitric acid and decomposing the solution at 500°C before calcination

(e.g., Davis, Holla, Kelle). These compounds are mixed in the desired atomic ratios and ground to a fine powder to facilitate the calcination process. Then these room-temperature-stable salts are reacted by calcining for an extended period ($\approx$ 20 hr) at elevated temperatures ($\approx$ 900°C). This process may be repeated several times, with pulverizing and mixing of the partially calcined material at each step. As the reaction proceeds, the color of the charge changes. The process usually ends with a final oxygen anneal followed by a slow cool down to room temperature of the powder, or pellets made from the powder, by sintering in a cold or hot press. Sintering is not essential for the chemical process, but for transport and other measurements it is convenient to have the material pelletized. A number of researchers have provided information on this solid-state reaction approach (e.g., Allge, Finez, Galla, Garla, Gopal, Gubse, Hajk1, Hatan, Herrm, Hika1, Hirab, Jayar, Maen1, Mood1, Mood2, Neume, Poepp, Polle, Qadri, Rhyne, Ruzic, Saito, Sait1, Sawa1, Shamo, Takit, Tothz, Wuzz3).

Some of the earlier works on foils, thick films, wires, or coatings employed a suspension of the calcined powder in a suitable organic binder, and the desired product was obtained by conventional industrial processes such as extruding, spraying, or coating.

In the second or coprecipitation process the starting materials for calcination are produced by precipitating them together from solution (e.g., Asela, Bedno, Leez7, Wang2). This has the advantage of mixing the constituents on an atomic scale. In addition the precipitates may form fine powders whose uniformity can be controlled, which can eliminate some of the labor. Once the precipitate has been dried, calcining can begin as in the solid-state reaction procedure. A disadvantage of this method, at least as far as the average physicist or materials scientist is concerned, is that it requires considerable skill in chemical procedures.

Another procedure for obtaining the start-up powder is the sol-gel technique in which an aqueous solution containing the proper ratios of Ba, Cu, and Y nitrates is emulsified in an organic phase and the resulting droplets are gelled by the addition of a high-molecular-weight primary amine which extracts the nitric acid. This process was initially applied to the La materials, but has been perfected for YBaCuO as well (Cimaz, Hatfi).

When using commercial chemical supplies to facilitate the calcination process a dry or wet (acetone) pregrinding with an agate mortar and pestle or a ball mill is recommended. Gravimetric amounts of the powdered precursor materials are thoroughly mixed and placed in a platinum or ceramic crucible. Care must be taken to ensure the compatibility of the ceramic crucible with the chemicals to obviate reaction and corrosion problems.

Complete recipes for the YBa* material have been described (e.g., Gran2). Typically, the mixture of unreacted oxides is calcined in air or oxygen around 900°C for 15 hr. During this time the YBaCuO mixture changes color from the green Y_2BaCuO_5 phase to the dark gray $YBa_2Cu_3O_{7-\delta}$ compound. Then the charge is taken out, crushed, and scanned with X rays to determine its purity. If warranted by the powder pattern X-ray scan, the calcination process is repeated. Often, at this stage the material is very oxygen poor, and electrically it is semi-

Attachment H

COPPER OXIDE SUPERCONDUCTORS

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with help from

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C. R. Sanders

Department of Physics and Astronomy
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WILEY

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H1

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QC611.98.C64P66 1988
539.6'23-dc19 88-18569 CIP
ISBN 0-471-62342-3

Printed in the United States of America

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CHARLES P. POOLE, JR.
TIMIR DATTA
HORACIO A. FARACH

Columbia, South Carolina
July 1988

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Attachment A

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LEVEL 1 - 1 OF 68 PATENTS

5,670,078

<=2> GET 1st DRAWING SHEET OF 7

Sep. 23, 1997

Magnetic and nonmagnetic particles and fluid, methods of making and methods of using the same

INVENTOR: Ziolo, Ronald F., Webster, New York

DETDESC:
... described in U.S. Pat. No. 4,474,886 to Ziolo. Examples of the precursor ions which may be used includes those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. In the case of a non-magnetic colloid, this may include ions of, for example, sulfur, selenium, gold, barium, cadmium, copper, silver, manganese, molybdenum, zirconium, gallium, arsenic, indium, tin, ...

... ions which can be incorporated into the resin beads to form both

single-domain and multi-domain magnetic particles include those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. These ions generally exist in the form of chlorides of the metal involved such as ferrous chloride, ferric chloride, copper chloride, nickel chloride, and the like. The corresponding iodides, bromides and fluorides may also be suitable. ...

LEVEL 1 - 2 OF 68 PATENTS

5,663,319

Sep. 2, 1997

Probe compositions for chromosome identification and methods

INVENTOR: Bittner, Michael L., Naperville, Illinois
Morrison, Larry E., DuPage County, Illinois
Legator, Mona S., Chicago, Illinois

SUM:

... capable of reacting, and a fluorophore group may have already reacted, with a linking group. A fluorescent compound may include an organic chelator which binds a luminescent inorganic ion such as a rare earth like terbium, europium, ruthenium, or the like.

The term "linking compound" or "linking group" as used herein generally refers to a hydrocarbonaceous moiety. A linking compound is capable of reacting, and a linking group may have ...

LEVEL 1 - 3 OF 68 PATENTS

5,601,934

<=2> GET 1st DRAWING SHEET OF 1

Feb. 11, 1997

Memory disk sheet stock and method

INVENTOR: Bartges, Charles W., Delmont, Pennsylvania
Baumann, Stephen E., Penn Hills, Pennsylvania
Hyland, Jr., Robert W., Oakmont, Pennsylvania
Jensen, Craig L., Pittsburgh, Pennsylvania
Tarcy, Gary P., Plum, Pennsylvania
Vinnedge, K. Dean, Bettendorf, Iowa
Skeen, Troy C., Bettendorf, Iowa

DETDESC:

... automatically grouped with this same series of elements even though it often performs the same function as scandium, or other "true" rare earths in an alloy composition. It is believed that minor amounts of still other rare earths, like erbium, thulium, lutetium, ytterbium, or another rare earth "act-alike", like hafnium, may be substituted for, or possibly even combined with scandium (or with each other) in varying quantities to achieve the ...

LEVEL 1 - 4 OF 68 PATENTS

5,593,951

<=2> GET 1st DRAWING SHEET OF 4

Jan. 14, 1997

Epitaxy of high T[C]superconductors on silicon

INVENTOR: Himpsel, Franz J., Mt. Kisco, New York

SUM:

... as well as to understand the basic mechanisms for superconductivity in this class of materials.

A2

Bednorz and Mueller first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure.

Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O ...

DETDESC:
... EMBODIMENTS

A technique is provided for depositing high T[c]superconducting copper-oxide based materials epitaxially on Si (001). Typically, these classes of superconducting materials include a rare earth or rare earth-like element and/or an alkaline earth element. Representative formulas for such materials are the following:

(A[1- chi]B chi)2Cu omicron [4- epsilon]

and

A1B2Cu3O[7- epsilon]

where A is a trivalent element (e.g., ...

... in the art that the present invention applies to epitaxial structures including silicon (001) surfaces and any copper oxide superconductor thereon. Thus, the teaching of this invention can include copper-oxide based compositions having any combinations of rare earth or rare earth-like elements and/or alkaline earth elements as well as copper oxide superconductors which do not contain rare earth elements. Further, it will be apparent to those of skill in the art that the Si (001) surface is ...

LEVEL 1 - 5 OF 68 PATENTS

5,573,574

Nov. 12, 1996

Electrorefined aluminium with a low content of uranium, thorium and rare earths

INVENTOR: Leroy, Michel, St. Egreve, France

SUM:
... applications specifies a minimum Al content of above 99.9995%, (and even sometimes above 99.9997%) and a U + Th content of less than 1 ppb, and even sometimes less than 0.3 or 0.1 ppb.

Rare earths, some of which, like samarium, have a significant alpha radioactivity, are also undesirable. By way of example, 10 ppb of natural samarium emits as many alpha particles as 0.1 ppb of uranium 238. The high purity ...

LEVEL 1 - 6 OF 68 PATENTS

5,569,759

<=2> GET 1st DRAWING SHEET OF 25

Oct. 29, 1996

Water soluble texaphyrin metal complex preparation

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:

... C), 10.24 (s, 2 [redacted] ArH), 12.23 (s, 2 H, CH=N); U.[redacted]s: lambda [max]420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3> , and Dy< + 3 > complexes.

EXAMPLE 4

Synthesis of B2T2 TXP, see FIGS. 7A and ...

LEVEL 1 - 7 OF 68 PATENTS

5,567,564

<=2> GET 1st DRAWING SHEET OF 7

Oct. 22, 1996

Liquid development composition having a colorant comprising a stable dispersion of magnetic particles in an aqueous medium

INVENTOR: Ziolo, Ronald F., Webster, New York

DETDESC:

... described in U.S. Pat. No. 4,474,886 to Ziolo. Examples of the precursor ions which may be used includes those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. In the case of a non-magnetic colloid, this may include ions of, for example, sulfur, selenium, gold, barium, cadmium, copper, silver, manganese, molybdenum, zirconium, gallium, arsenic, indium, tin, ...

... ions which can be incorporated into the resin beads to form both single-domain and multidomain magnetic particles include: those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. These ions generally exist in the form of chlorides of the metal involved such as ferrous chloride, ferric chloride, copper chloride, nickel chloride, and the like. The corresponding iodides, bromides and fluorides may also be suitable. ...

LEVEL 1 - 8 OF 68 PATENTS

5,554,428

Sep. 10, 1996

Memory disk sheet stock and method

INVENTOR: Bartges, Charles W., Delmont, Pennsylvania
Hayland, Jr., Robert W., Oakmont, Pennsylvania
Jensen, Craig J., Pittsburgh, Pennsylvania
Baumann, Steven F., Penn Hills, Pennsylvania (Rule 47 Application)

SUM:

... automatically grouped with this same series of elements even though it often performs the same function as scandium, or other "true" rare earths in an alloy composition. It is believed that minor amounts of still other rare earths, like erbium, thulium, lutetium, ytterbium, or another rare earth "act-alike", like hafnium, may be substituted for, or possibly even combined with scandium (or with each other) in varying quantities to achieve the ...

LEVEL 1 - 9 OF 68 PATENTS

5,504,205

<=2> GET 1st DRAWING SHEET OF 25

Apr. 2, 1996

A4

Reduced sp<3 > texaphyrins

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis: lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3 > and Dy< + 3 > complexes.
EXAMPLE 4

Synthesis of B2T2 TXP, see FIG. 7.

...

LEVEL 1 - 10 OF 68 PATENTS

5,491,224

Feb. 13, 1996

Direct label transaminated DNA probe compositions for chromosome identification and methods for their manufacture

INVENTOR: Bittner, Michael L., 1768 Brookdale Rd., Naperville, Illinois 60563
Morrison, Larry E., 21 W. 559 Kensington Rd., Glen Ellyn, Illinois 60137
Legator, Mona S., 6540 N. Francisco, Chicago, Illinois 60645

DETDESC:
... capable of reacting, and a fluorophore group may have already reacted, with a linking group. A fluorescent compound may include an organic chelator which binds a luminescent inorganic ion such as a rare earth like terbium, europium, ruthenium, or the like.

The term "linking compound" or "linking group" as used herein generally refers to a hydrocarbonaceous moiety. A linking compound is capable of reacting, and a linking group may have ...

LEVEL 1 - 11 OF 68 PATENTS

5,475,104

<=2> GET 1st DRAWING SHEET OF 26

Dec. 12, 1995

Water soluble texaphyrin metal complexes for enhancing relaxivity

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3 > and Dy< + 3 > complexes.
EXAMPLE 4
Synthesis of B2T2 TXP, see FIGS. 7A and ...

LEVEL 1 - 12 OF 68 PATENTS

5,457,183

A5

<=2> GET 1st DRAWING SHEET OF 51

Oct. 10, 1995

Hydroxylated texaphyrins

INVENTOR: Sessler, Jonathan L., Austin, Texas
Mody, Tarak D., Sunnyvale, California
Hemmi, Gregory W., Sunnyvale, California
Kral, Vladimir, Na Kozaaoa, Czechoslovakia

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis: lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized in a similar manner including the La< + 3> , Nd< + 3> , Sm< + 3> , Eu< + 3> , Gd< + 3> , Dy< + 3 > and Tm< + 3 > complexes.
...

LEVEL 1 - 13 OF 68 PATENTS

5,451,576

<=2> GET 1st DRAWING SHEET OF 26

Sep. 19, 1995

Tumor imaging and treatment by water soluble texaphyrin metal complexes

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis: lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3> and Dy< + 3 > complexes.
EXAMPLE 4

Synthesis of B2T2 TXP, see FIGS. 7A and ...

LEVEL 1 - 14 OF 68 PATENTS

5,447,906

Sep. 5, 1995

Thin film high TC oxide superconductors and vapor deposition methods for making the same

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Gambino, Richard J., Yorktown Heights, New York
Koch, Roger H., Amawalk, New York
Lacey, James A., Mahopac, New York
Laibowitz, Robert B., Peekskill, New York
Viggiano, Joseph M., Wappingers Falls, New York

ABST:
... films are produced by vapor deposition processes using pure metal sources for the metals in the superconducting compositions, where the metals include multi-valent nonmagnetic transition metals, rare earth elements and/or rare earth-like elements and alkaline earth elements. The substrate is exposed to oxygen during vapor deposition, and, after formation of the film, there is at least one annealing step in an oxygen ambient and slow cooling over several

hours to room tem[illegible]ature. The substrates chosen a[illegible]not critical as long as they are not adve[illegible]ly reactive with the supercond[illegible]ing oxide film. Transition metals include Cu, Ni, Ti and V, while the rare earth-like elements include Y, Sc and La. The alkaline earth elements include Ca, Ba and Sr.

SUM:

... material in the last decade, wherein the critical transition temperature T c at which the material becomes superconducting was increased substantially.

Bednorz and Mueller described copper oxide material including a rare earth element, or rare earth-like element, where the rare earth element could be substituted for by an alkaline earth element such as Ca, Ba or Sr.

The work of Bednorz and Mueller has led to intensive investigation in many laboratories in ...

... 40o K. and methods for making these films, where the films exhibit perovskite-like structure.

It is another object of this invention to provide transition metal oxide superconductive films including a rare earth element, or rare earth-like element, where the films exhibit superconductivity at temperatures greater than 40o K., and methods for making these films.

It is another object of the present invention to provide films having the nominal composition ABO 3 - y or ABO y ...

... provide superconductive oxide films having the nominal composition AB2 Cu3O 9 - y , and methods for making these films, where the films are superconducting at temperatures in excess of 40o K. and A is a rare earth or rare earth-like element, B is an alkaline earth element, and y is sufficient to satisfy valence demands of the composition.

Pat. No. 5447906, *

It is another object of the present invention to provide smooth, continuous copper oxide superconducting films having a perovskite-like ...

... films being smooth and continuous and exhibiting substantial compositional uniformity. In particular, the films are comprised of transition metal oxides containing a superconducting phase, and typically include a rare earth element or rare earth-like element. These rare earth-like elements include Y, Sc and La. Additionally, the rare earth or rare earth-like elements can be substituted for by an alkaline earth element selected from the group consisting of Ca, Ba, and Sr. The transition metals are multi-valent, non-magnetic elements selected from the group consisting of ...

DETDESC:

... especially a T c in excess of liquid nitrogen temperatures. These films are characterized by the presence of a transition metal oxide and typically by the presence of a rare earth element and/or a rare earth-like element which can be substituted for by an alkaline earth. The transition metal element is a multi-relent nonmagnetic element while the alkaline earth element is selected from the group consisting of Ca, Ba, and Sr. The rare earth-like elements include Y, Sc, and La. The nonmagnetic transition metal is selected from the group consisting of Cu, Ni, Ti, and V. Of these, Cu is the most favorable, yielding film properties which are unique and unexpected.

In the further ...

LEVEL 1 - 15 OF 68 PATENTS

5,439,570

<=2> GET 1st DRAWING SHEET OF 26

Aug. 8, 1995

Water soluble texaphyrin metal complexes for singlet oxygen

A7

production

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis: lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3 > and Dy< + 3 > complexes.
EXAMPLE 4

Synthesis of B2T2 TXP, see FIGS. 7A and ...

LEVEL 1 - 16 OF 68 PATENTS

5,432,171

<=2> GET 1st DRAWING SHEET OF 26

Jul. 11, 1995

Water soluble texaphyrin metal complexes for viral deactivation

INVENTOR: Sessler, Jonathan L., Austin, Texas
Hemmi, Gregory W., Austin, Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N); UV/vis: lambda max 420.0, 477.5, 730.0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3 > and Dy< + 3 > complexes.
EXAMPLE 4

Synthesis of B2T2 TXP, see FIGS. 7A and ...

LEVEL 1 - 17 OF 68 PATENTS

5,362,582

Nov. 8, 1994

Battery separator

INVENTOR: Chang, Victor S., Ellicott City, Maryland
Hartwig, Richard C., Laurel, Maryland
Lundquist, Joseph T., Gilroy, California
Parham, Marc E., Bedford, Massachusetts
Kung, James K., Lexington, Massachusetts
Avtges, James A., Belmont, Massachusetts
Laccetti, Anthony J., North Andover, Massachusetts

SUM:
... say the particulate filler must be inert with respect to such end use battery environment. Therefore, alkali insoluble particulate such as zirconia and titanium dioxide (preferred), oxides, hydroxides and carbonates of calcium, magnesium, iron, rare earth and the like should be used only in sheet products which ultimately are formed into battery separators for alkaline batteries. Similarly, acid insoluble particulates such as silica (a precipitated silica is preferred), and the like should be ...

LEVEL 1 - 18 OF 68 PATENTS

5,358,659

<=2> GET 1st DRAWING SHEET OF 5

Oct. 25, 1994

Magnetic materials with single-domain and multidomain crystallites and a method of preparation

INVENTOR: Ziolo, Ronald F., Webster, New York

DETDESC:
... Ions which can be incorporated into the resin beads to form both single-domain and multidomain magnetic particles include: those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. These ions generally exist in the form of chlorides of the metal involved such as ferrous chloride, ferric chloride, copper chloride, nickel chloride, and the like. The corresponding iodides, bromides and fluorides may also be suitable. ...

LEVEL 1 - 19 OF 68 PATENTS

5,322,756

<=2> GET 1st DRAWING SHEET OF 3

Jun. 21, 1994

Magnetic fluids and method of preparation

INVENTOR: Ziolo, Ronald F., Webster, New York

DETDESC:
... several different ions including ferrous or ferric ions. Examples of the precursor ions which may be used includes those derivable from transition metal ions, such as iron, cobalt, nickel, manganese, vanadium, chromium, rare earths and the like. These ions generally exist in the form of chlorides of the metal involved, such as ferrous chloride, ferric chloride, copper chloride, nickel chloride, and the like. The corresponding iodides, bromides and fluorides may also be suitable. ...

LEVEL 1 - 20 OF 68 PATENTS

5,304,966

<=2> GET 1st DRAWING SHEET OF 4

Apr. 19, 1994

Method of adjusting a frequency response in a three-conductor type filter device

INVENTOR: Hino, Seigo, Nagoya, Japan
Ito, Kenji, Nagoya, Japan

SUM:
... each other. Each of the dielectric substrates 1 and 2 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 1 is provided with an external ground conducting layer 3 on the peripheral portion and bottom surface thereof. Similarly, the upper dielectric substrate 2 is provided with an external ground conducting layer 4 on the ...

DETDESC:
... assembling of the filter. Each of the dielectric substrates 21 and 22 may be of dielectric ceramic material having a high dielectric constant and a lower

dielectric loss such as [redacted]O-TiO2, BaO-TiO2-rare earth or [redacted]e like. The lower dielectric substrate 21 is provided with an external ground conductor layer 23 on the peripheral portion and outer surface thereof. Similarly, the upper dielectric substrate 22 is provided with an external ground conductor layer 24 on the ...

LEVEL 1 - 21 OF 68 PATENTS

5,296,458

<=2> GET 1st DRAWING SHEET OF 4

Mar. 22, 1994

Epitaxy of high T c superconducting films on (001) silicon surface

INVENTOR: Himpsel, Franz J., Mt. Kisco, New York

SUM:

... as well as to understand the basic mechanisms for superconductivity in this class of materials.

Bednorz and Mueller first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure. Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O ...

DETDESC:

... EMBODIMENTS

A technique is provided for depositing high T c superconducting copper-oxide based materials epitaxially on Si (001). Typically, these classes of superconducting materials include a rare earth or rare earth-like element and/or an alkaline earth element. Representative formulas for such materials are the following:

(A 1 - x B x)2CuO4 - epsilon and A1B2Cu3O 7 - epsilon

where A is a trivalent element (e.g., La, Y, and ...

... in the art that the present invention applies to epitaxial structures including silicon (001) surfaces and any copper oxide superconductor thereon. Thus, the teaching of this invention can include copper-oxide based compositions having any combinations of rare earth or rare earth-like elements and/or alkaline earth elements as well as copper oxide superconductors which do not contain rare earth elements. Further, it will be apparent to those of skill in the art that the Si (001) surface is ...

LEVEL 1 - 22 OF 68 PATENTS

5,291,162

<=2> GET 1st DRAWING SHEET OF 7

Mar. 1, 1994

Method of adjusting frequency response in a microwave strip-line filter device

INVENTOR: Ito, Kenji, Nagoya, Japan
Shimizu, Hiroyuki, Nagoya, Japan
Oguchi, Hotaka, Nagoya, Japan

SUM:

... type which comprises a pair of dielectric substrates 1a and 1b made of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2 or BaO-TiO2-rare earth or the like, the

dielectric substrates 1[illegible]nd 1b being stacked to each ot[illegible]. The dielectric substrates 1a and 1b are provided with external ground conducting layers 2a and 2b on the peripheral portion and bottom surface thereof, respectively. On the upper ...

DETDESC:

... assembling of the filter. Each of the dielectric substrates 11 and 12 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 11 is provided with an external ground conducting layer 13 on the peripheral portion and outer surface thereof. Similarly, the upper dielectric substrate 12 is provided with an external ground conducting layer 14 on the ...

... a pair of piezoelectric substrates 11 and 12 each of which may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The dielectric substrates 11 and 12 are provided with external ground conducting layers 13 and 14 on the peripheral portions and outer surfaces thereof, respectively. These ground conducting layers 13 and 14 may be formed by ...

LEVEL 1 - 23 OF 68 PATENTS

5,278,140

<=2> GET 1st DRAWING SHEET OF 5

Jan. 11, 1994

Method for forming grain boundary junction devices using high T c superconductors

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Chi, Cheng-Chung J., Yorktown Heights, New York
Dimos, Duane B., Montclair, New Jersey
Mannhart, Jochen D., Metzingen, New York, Federal Republic of Germany
Tsuei, Chang C., Chappaqua, New York

SUM:

... as well as to understand the basic mechanisms for superconductivity in this class of materials.

Bednorz and Mueller first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure. Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O ...

... excess of about 30o K are generally known as "high T c superconductors", and will be referred to in that manner throughout the specification. This designation is meant to include both the materials having rare earth or rare earth-like elements in their crystalline structure, as well as the more recently reported materials which do not contain rare earth or rare earth-like elements. Generally, all these materials are copper oxide based superconductors having Cu-O planes that appear to be primarily responsible for carrying the supercurrents, where the copper oxide planes are separate or in groups separated by the ...

LEVEL 1 - 24 OF 68 PATENTS

5,252,720

<=2> GET 1st DRAWING SHEET OF 25

Oct. 12, 1993

Metal complexes of water soluble texaphyrins

INVENTOR: Sessler, Jonathan L., Austin, Texas

B2 A11

Hemmi, Gregory W., Aus[redacted], Texas
Mody, Tarak D., Austin, Texas

DETDESC:
... 2H, CH=C), 10.24 (s, 2H, ArH), 12.23 (s, 2H, CH=N) ; UV/vis: lambda max 420.0, 477.5, 730. 0; FAB MS M< + > 811.

Other lanthanide and rare earth-like metal complexes may be synthesized including the Gd< + 3> , Lu< + 3> , La< + 3> , In< + 3 > and Dy< + 3 > complexes.
EXAMPLE 4
Synthesis of B2T2 TXP, see FIG. 7

...

LEVEL 1 - 25 OF 68 PATENTS

5,235,298

<=2> GET 1st DRAWING SHEET OF 2

Aug. 10, 1993

Temperature compensated stripline filter for microwaves

INVENTOR: Banno, Hisao, Nagoya, Japan
Nishiki, Masahiro, Nagoya, Japan

SUM:
... 4,785,271 and Japanese Patent Prepublication No. 62-263702.

With the microwave stripline filter of the abovementioned type, generally, each dielectric ceramic substrate is made of ceramic material such as BaO-TiO2, BaO-TiO2-rare earth or the like.

However, there is disadvantage that the commonly used ceramic material has a resonant frequency which is decreased as the temperature is risen because the temperature coefficient of the resonant frequency is of a negative characteristic.

It is therefore an object of the present invention to provide a stripline ...

LEVEL 1 - 26 OF 68 PATENTS

5,188,809

<=2> GET 1st DRAWING SHEET OF 4

Feb. 23, 1993

Method for separating coke from a feed mixture containing zirconium and radioactive materials by flotation process

INVENTOR: Crocker, William A., Salem, Oregon
Haygarth, John C., Corvallis, Oregon
Riesen, Jon A., Albany, Oregon
Peterson, John R., Salem, Oregon

DETDESC:
... radium removal.

b) Sodium sulfate or any other source of soluble sulfate is then added in excess of the concentration of the barium plus radium ion equivalents and any other cations which might combine with the sulfate ions, i.e. calcium, rare earths, or the like. If the solution is cold, it should be heated and a digestion allowed to take place which can range from a fairly short time up to hours or days. The preferred digestion period would be a few hours with ...

LEVEL 1 - 27 OF 68 PATENTS

5,162,298

<=2> GET 1st DRAWING SHEET OF 5

Nov. 10, 1992

Grain boundary junction devices using high T c superconductors

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Chi, Cheng-Chung J., Yorktown Heights, New York
Dimos, Duane B., Upper Montclair, New Jersey
Mannhart, Jochen D., Metzingen, New York, Federal Republic of Germany
Tsuei, Chang C., Chappaqua, New York

SUM:
... as well as to understand the basic mechanisms for superconductivity in this class of materials.

Bednorz and Mueller first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure. Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O ...

... excess of about 30o K. are generally known as "high T c superconductors", and will be referred to in that manner throughout the specification. This designation is meant to include both the materials having rare earth or rare earth-like elements in their crystalline structure, as well as the more recently reported materials which do not contain rare earth or rare earth-like elements. Generally, all these materials are copper oxide based superconductors having Cu-O planes that appear to be primarily responsible for carrying the supercurrents, where the copper oxide planes are separate or in groups separated by the ...

... [*4] copper oxide material having a superconducting onset temperature greater than 77 K.

[*5] 5. The device of claim 4, where said superconducting material includes an atom selected from the group consisting of rare earth atoms and rare earth-like atoms.

[*6] 6. The device of claim 4, where said superconducting material includes an alkaline earth atoms.

[*7] 7. The device of claim 4, where said superconducting material includes bismuth.

[*8] 8. The device of claim 1, where ...

LEVEL 1 - 28 OF 68 PATENTS

5,160,482

<=2> GET 1st DRAWING SHEET OF 8

Nov. 3, 1992

Zirconium-hafnium separation and purification process

INVENTOR: Ash, Kenneth C., Corvallis, Oregon
Crocker, William A., Salem, Oregon
Haygarth, John C., Corvallis, Oregon
Lee, David R., Lebanon, Oregon
Morris, Donald, Corvallis, Oregon
Peterson, John R., Salem, Oregon
Riesen, Jon A., Albany, Oregon
Yih, Robert S., Salem, Oregon

A13

DETDESC:
... system or solution.

b) Sodium sulfate or any other source of soluble sulfate is then added in excess of the concentration of the barium plus radium ion equivalents and any other cations which might combine with the sulfate ions, i.e. calcium, rare earths, or the like. If the solution is cold, it should be heated and a digestion allowed to take place which can range from a fairly short time up to hours or days. The preferred digestion period would be a few hours with ...

LEVEL 1 - 29 OF 68 PATENTS

5,112,795

May 12, 1992

Supported silver catalyst, and processes for making and using same

INVENTOR: Minahan, David M., Cross Lanes, West Virginia
Thorsteinson, Erlind M., Charleston, West Virginia
Liu, Albert C., Charleston, West Virginia

SUM:
... metal promoter employed is not critical and may include the one or more alkali metals; one or more alkaline earth metals; or one or more other promoters, such as thallium, gold, tin, antimony, rare earths and the like. The catalysts produced are said to be equally as efficient as catalysts produced by coincidental methods of preparation.

Supported, silver-containing, alkylene oxide catalysts often include one or more metal- ...

LEVEL 1 - 30 OF 68 PATENTS

5,084,684

<=2> GET 1st DRAWING SHEET OF 5

Jan. 28, 1992

Method of adjusting a frequency response in a three-conductor type filter device

INVENTOR: Shimizu, Hiroyuki, Nagoya, Japan
Ito, Kenji, Nagoya, Japan
Wakita, Naomasa, Nagoya, Japan

SUM:
... each other. Each of the dielectric substrates 1 and 2 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 1 is provided with an external ground conducting layer 3 on the peripheral portion and bottom surface thereof. Similarly, the upper dielectric substrate 2 is provided with an external ground conducting layer 4 on the ...

DETDESC:
... assembling of the filter. Each of the dielectric substrates 11 and 12 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 11 is provided with a ground conducting layer 13 on the lower or outer surface thereof. Similarly, the upper dielectric substrate 12 is provided with a ground conducting layer 14 on the upper or ...

LEVEL 1 - 31 OF 68 PATENTS

5,084,312

> GET 1st DRAWING SHEET OF .

Jan. 28, 1992

Molten metal containment vessel with rare earth oxysulfide protective coating thereon and method of making same

INVENTOR: Krikorian, Oscar H., Danville, California
Curtis, Paul G., Tracy, California

SUM:
... same. More particularly, this invention relates to an improved containment vessel for molten metals formed by coating at least the inside surface of a containment vessel with an oxysulfide or sulfide of a rare earth or rare earth-like element.

Molten metals such as uranium, plutonium, aluminum, and calcium are usually contained in vessels or crucibles made from graphite or a refractory metal such as, for example, niobium, tantalum, molybdenum, or tungsten. ...

... in which wetting of the vessel's surfaces by molten metal is inhibited by coating the surfaces of at least the inner walls of the containment vessel with one or more compounds comprising an oxysulfide of a rare earth or a rare earth-like element to inhibit such wetting and or adherence by the molten metal.

It is a further object of this invention to provide a method for making an improved molten metal containment vessel in which wetting of the surfaces by ...

DETDESC:
... rare earth oxysulfide or sulfide compound include the lanthanide elements La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu; as well as the rare earth-like elements Sc and Y; and actinides such as Th and U. The term "rare earth" and "rare earth elements", as used herein, are therefore intended to define any of the above listed elements.

The rare earth oxysulfide and sulfide coatings of the ...

LEVEL 1 - 32 OF 68 PATENTS

5,075,653

Dec. 24, 1991

Method of adjusting a frequency response in a three-conductor type filter device

INVENTOR: Ito, Kenji, Nagoya, Japan
Shimizu, Hiroyuki, Nagoya, Japan

SUM:
... each other. Each of the dielectric substrates 1 and 2 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 1 is provided with an external ground conducting layer 3 on the peripheral portion and bottom surface thereof. Similarly, the upper dielectric substrate 2 is provided with an external ground conducting layer 4 on the ...

DETDESC:
... assembling of the filter. Each of the dielectric substrates 11 and 12 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 11 is provided with an external ground conducting layer 13 on the peripheral portion and outer surface thereof. Similarly, the upper dielectric substrate 12 is provided with an external ground conducting layer 14 on the ...

LEVEL 1 - 33 OF 68 PATENTS

A15

5,066,934

<=2> GET 1st DRAWING SHEET OF 6

Nov. 19, 1991

Method of adjusting a frequency response in a stripline filter device

INVENTOR: Ito, Kenji, Nagoya, Japan
Shimizu, Hiroyuki, Nagoya, Japan
Wakita, Naomasa, Nagoya, Japan

SUM:

... each other. Each of the dielectric substrates 1 and 2 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate I is provided with an external ground conducting layer 3 on the peripheral portion and bottom surface thereof. Similarly, the upper dielectric substrate 2 is provided with an external ground conducting layer 4 on the ...

DETDESC:

... assembling of the filter. Each of the dielectric substrates 11 and 12 may be of dielectric ceramic material having a high dielectric constant and a lower dielectric loss such as BaO-TiO2, BaO-TiO2-rare earth or the like. The lower dielectric substrate 11 is provided with an external ground conducting layer 13 on the peripheral portion and outer surface thereof. Similarly, the upper dielectric substrate 12 is provided with an external ground conducting layer 14 on the ...

LEVEL 1 - 34 OF 68 PATENTS

5,045,289

<=2> GET 1st DRAWING SHEET OF 4

Sep. 3, 1991

Formation of rare earth carbonates using supercritical carbon dioxide

INVENTOR: Fernando, Quintus, Tucson, Arizona
Yanagihara, Naohisa, Zacopan, New Mexico, Mexico
Dyke, James T., Santa Fe, New Mexico
Vemulapalli, Krishna, Tuscon, Arizona

SUM:

... invention. This technique finds use in facilitating the extraction of these materials from rare earth containing mineral ores by providing a scheme for separating these particular rare earths from other rare earth and rare earth-like materials which do not react to form carbonates.

2. Description of the Prior Art

The rare earths, also known as the lanthanides or as lanthanons, and meaning here those elements having atomic numbers 57 to 71, are substances finding utility ...

DETDESC:

... synthesis of rare earth carbonates from certain select rare earths in the trivalent (+ 3) state as normally found in, for example, rare earth oxides or hydroxides, from other rare earths or rare earth-like materials. Rare earth-like materials are those compounds associated with, normally present in, or formed during the processing of, the various source ores from which the lanthanides are derived. These materials, while not true rare earths are analogous to the lanthanides in structure and behavior and are therefore of concern during processing and separation. Included among these rare earth-like

materials are compounds formed from the actinides, (elements of atomic numbers 89 to 103, such as thorium), titanium, yttrium, and zirconium. In general, these elements, which form the rare earth-like compounds, are present in their + 4 oxidation state; examples include ThO2 and ZrO2. The process of the invention has utility in the quantitative precipitation of the particular reactive lanthanides in the + 3 oxidation state and in the separation of these ...

... about 40o C. High yields of 95% or better are obtained in approximately one hour. These particular rare earth oxides or hydroxides can thus be readily separated from the oxides or hydroxides of rare earth or rare earth-like elements such as praseodymium (Pr), terbium (Tb), erbium (Er), ytterbium (Yb), zirconium (Zr), cerium (Ce), and thorium (Th) because these latter rare earth and rare earth-like oxides (or hydroxides) do not form carbonates under the above conditions despite the fact that some are in the trivalent state. It is believed that the oxides of these elements are particularly complex and as such do not readily react under the conditions of the invention.

This ...

Pat. No. 5045289, *

... through appropriate valves and the reaction solution is then filtered. The solids which remain are then washed with deionized water and dried in air. These solids comprise both the rare earth materials which have reacted to form carbonates and also those rare earth and/or rare earth-like materials which did not react, or did not react significantly, and have thus remained in their oxide or hydroxide form.

The solid precipitate obtained above is next treated with a dilute acid such as HCl in a concentration of between 0.1 and 3.0M. Preferrably 0.5M HCl is used at ambient temperature and pressure. This acid treatment solubilizes the rare earth carbonates, leaving the unreacted rare earth and rare earth-like oxides and/or hydroxides behind in their solid form. The resultant solution is filtered and the carbonate fraction can be further broken down into individual rare earth carbonates by techniques such as ion exchange or ...

... La2O3(49.72%), Nd2O3(20.02%), Tb4O7(5.08%), Yb2O3(5.10%) and ThO2(20.07%), a high degree of separation of La and Nd was obtained-namely, between 94.3% and 99.8%. Notably, the other rare earth or rare earth-like oxides in this mixture are among those which do not react to form carbonates with supercritical carbon dioxide or by the process of the invention.

The following example will illustrate and describe without limiting the invention. The example illustrates the carbonation process of the invention using essentially pure rare earth oxides.

EXAMPLE

Synthesis of Lanthanide Carbonates

The oxides of the following rare earths and rare earth-like materials, La2O3, CeO2, Pr6O11, Nd2O3,Sm2O3, Eu2O3, Gd2O3, Tb4O7, Dy2O3, Ho2O3, Er2O3, Yb2O3 and ZrO2, were obtained from Alfa Division, Danvers, MA, and were 99.9% pure. The carbon dioxide used in this ...

LEVEL 1 - 35 OF 68 PATENTS

4,977,937

<=2> GET 1st DRAWING SHEET OF 4

Dec. 18, 1990

Multiple angle jointer and planer knives

INVENTOR: Hessenthaler, George D., 585 W. 3900 South, #6, Murray, Utah 84123

DETDESC:

... gibe or locking bars, not shown, are tightened, the blade magnets 53 are selected to attract even minimally magnetic material, such as carbide. To provide such magnetic attraction the selected magnets should be very strong,

such as rare earth, or [redacted]e magnets.

Like the jointer jig 40, a planer jig 60, shown in FIGS. 9 and 10 also utilizes magnets for maintaining blade positioning in a cylindrical cutterhead 61 ...

PAG

LEVEL 1 - 36 OF 68 PATENTS

4,962,086

<=2> GET 1st DRAWING SHEET OF 2

Oct. 9, 1990

High T c superconductor - gallate crystal structures

INVENTOR: Gallagher, William J., Ardsley, New York
Giess, Edward A., Purdys, New York
Gupta, Aranava, Valley Cottage, New York
Laibowitz, Robert B., Peekskill, New York
O'Sullivan, Eugene J., Peekskill, New York
Sandstrom, Robert L., Chappaqua, New York

ABST:
High T c oxide superconductive films can be formed on gallate layers, where the gallate layers include a rare earth element or a rare earth-like element. Combinations of rare earth elements and rare earth-like elements can also be utilized. The superconductive films can be epitaxially deposited on these gallate layers to form single crystals or, in the minimum, highly oriented superconductive layers. Any high T c superconductive ...

SUM:
... materials having Cu-O planes therein which are responsible for carrying supercurrents in these materials. Epitaxial films of these high T c superconductors can be deposited on gallate substrates, where the substrates are rare earth gallates or rare earth-like gallates. These superconductor-substrate combinations are particularly suited for analog and digital signal processing devices including matched filters, correlators, Fourier transformers, spectrum analyzers, samplers, A/D converters, etc.

...

... high T c superconductors.

The high T c superconductors used with these gallate substrates are preferably those which include Cu-O and Cu-O like current carrying planes and can include rare earth and rare earth-like elements, as well as combinations of these elements. Also included are the non-rare earth high T c superconductors such as those having Bi-Sr-Ca-Cu-O compositions and Tl-Ba-Ca-Cu- ...

... less than that when copper containing oxide superconductors are used. Lattice matching of the superconductor atomic spacing to the Ga-O plane is especially good with the copper oxide superconductors which form unique combinations with these gallates.

These rare earth and rare earth-like gallate substrates can be prepared in high quality crystal form and provide excellent lattice matches to the Cu-O based superconducting perovskites. This is important in device applications since for ...

DRWDESC:
BRIEF DESCRIPTION OF THE DRAWINGS

Pat. No. 4962086, *

FIG. 1 illustrates a high T c superconducting film epitaxially deposited on a rare earth or rare earth-like gallate substrate.

FIG. 2 illustrates a structure including a high T c superconducting strip

line surrounded by a g[redacted]e lattice-matched insulator, [redacted]further including high ...

DETDESC:

... 10 has been deposited on the crystal substrate 12. A cooling means, if needed, is not shown but is well known in the art.

Substrate 12 is a gallate substrate comprised of a rare earth or rare earth-like element, gallium, and oxygen. Examples include LaGaO3 and NdGaO3. A mixed gallate can also be used, such as one prepared from La-Y solid solutions. This technique is used to provide different lattice ...

... for use in the substrate include elements 58-71 of the periodic table, and in particular, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu. The rare earth-like elements suitable for use in the gallate substrates include Y, La, Bi and Sc. As noted, combinations of these rare earth and rare earth-like elements can also be used.

For the copper oxide superconductors the rare earth elements Tb, Dy, Ho, Er, Tm, Yb, and Lu may not provide atomic spacings that give lattice ...

... one which in preferred form is characterized by Cu-O planes that are primarily responsible for carrying the supercurrents in these materials. They generally have a perovskite-related structure and can include rare earth and/or rare earth-like elements. These materials often include alkaline earth elements, as for example Ca, Ba, Sr, Mg, . . . An example of a 92o K. superconductor is the well known YBa2Cu3O 7 - x , which is the so-called " ...

... be difficult to stabilize the approximately 110o K. superconducting phase of Bi-Sr-Ca-Cu-O superconductors. However, a favorable epitaxial substrate chosen from the class of gallates including a rare earth or rare earth-like element may aid in stabilizing this and other high T c phases. A cut along the [110] orthorhombic unit cell of GdGaO3 would expose a surface with a favorable lattice match which ...

... While the unit cell of this superconducting thin film is rotated 45o with respect to the unit cell of the perovskite substrate, such rotation will not be needed for epitaxial matches of different superconductors to the rare earth and rare earth-like gallate substrates. One of skill in the art would use an orientation of the substrate such that good epitaxy and lattice matching will occur with the chosen superconducting film. In this example, the a and b axes are in the plane of the ...

... approximates a (100) cubic perovskite surface. With this as a guide, the substrate boule material is cut to provide the desired orientation.

It has been noted that the gallate substrates including a rare earth element or a rare earth-like element exhibit good hardness and tolerance to high temperatures. However, it may be preferable to process the superconducting film at temperatures less than the rhombohedral-orthorhombic transition of the substrate in order to maintain the slight orthorhombicity of the substrate.

Pat. No. 4962086, *

...

... Lett. 58, 2684 (1987).

In the practice of this invention, highly oriented films of high T c oxide superconductors have been deposited on gallate substrates. These substrates are those which include at least one rare earth element or rare earth-like element. The superconducting epitaxial films are highly oriented and can approximate single crystals.

In the further practice of this invention, these high T c oxide superconducting film-gallate substrate combinations are particularly suitable ...

... apparent to tho[illegible]f skill in the art that varia[illegible]s can be made therein without departing from the spirit and scope of the present invention. For example, the gallate substrate materials may include combinations of rare earth elements and rare earth-like elements, and may also be doped to slightly vary lattice parameters. Further, the superconductive films deposited on these substrates, while preferably being copper oxide-based superconductors, can include rare earth elements, rare earth-like elements, and alkaline earth elements. Still further, combinations of these elements may be present and, also, rare earth elements need not be present in the superconducting film.

The best epitaxial matches occur when the ...

LEVEL 1 - 37 OF 68 PATENTS

4,882,718

<=2> GET 1st DRAWING SHEET OF 3

Nov. 21, 1989

Single-head, direct overwrite magneto-optic system and method

INVENTOR: Kryder, Mark H., Pittsburgh, Pennsylvania
Shieh, Han-Ping D., Pittsburgh, Pennsylvania

DETDESC:

... domain will realign and not grow. Ferrimagnetic alloys including light rare earths such as gadolinium usually provide good mobility but generally require an approximately equal proportion of a heavy rare earth like terbium to increase coercivity to an effective operating level.

A preferred formulation (in atomic %) tested in the laboratory is as follows:

Gd13 Tb13 Fe59 Co15 having a compensation temperature of 90o ...

LEVEL 1 - 38 OF 68 PATENTS

4,882,067

<=2> GET 1st DRAWING SHEET OF 1

Nov. 21, 1989

Process for the chemical bonding of heavy metals from sludge in the silicate structure of clays and shales and the manufacture of building and construction materials therewith

INVENTOR: Johnson, Barrett, Sunnyvale, California
Rubenstein, Charles B., Los Gatos, California

DETDESC:

... containing heavy metals which are generally considered to be toxic to humans and animal life, including arsenic, cobalt, cadmium, chromium, lead, nickel, selenium, thallium, zinc, magnesium, copper, antimony, barium, molybdenum, rare earths and the like and incidental organic toxins. In general, the invented process comprises a batch or continuous operation for the processing of industrial waste and contaminated water. The process developed as described in this patent is not ...

LEVEL 1 - 39 OF 68 PATENTS

4,806,328

Feb. 21, 1989

Method of manufacturing monolithic glass members

INVENTOR: Van Lierop, Joseph G., Eindhoven, Netherlands
Bogemann, Arnoldus B. M., Eindhoven, Netherlands

Felder, Willy J. B., Vijlen, Netherlands
Huizing, Albert, Eindhoven, Netherlands

SUM:

... example, to adjust the refractive index of the glass member obtained after densification of the gel at a given value and/or to control other physical properties. Examples of such compounds are alkoxy compounds of aluminium, titanium, boron, germanium, rare earths and the like, of which the alkoxy groups each generally do not comprise more than 4 carbon atoms. Nitrates, carbonates, acetates and other compounds which decompose easily while forming oxides, may optionally also be used. Fluorine ...

LEVEL 1 - 40 OF 68 PATENTS

4,775,820

<=2> GET 1st DRAWING SHEET OF 3

Oct. 4, 1988

Multilayer electroluminescent device

INVENTOR: Eguchi, Ken, Yokohama, Japan
Kawada, Haruki, Kawasaki, Japan
Nishimura, Yukuo, Sagamihara, Japan

SUM:

... composed of a material of EL function dispersed in a binder.

As the material of EL function, there have been known heretofore inorganic metal materials such as ZnS containing Mu, Cu, ReF3 (Re: rare earths) or the like as an activating agent, and the like.

In the case of a thin film type EL device, the structure is suitable for the following purposes, that is, a thin luminescent layer can be formed so as to ...

LEVEL 1 - 41 OF 68 PATENTS

4,734,338

<=2> GET 1st DRAWING SHEET OF 3

Mar. 29, 1988

Electroluminescent device

INVENTOR: Eguchi, Ken, Yokohama, Japan
Kawada, Haruki, Kawasaki, Japan
Nishimura, Yukuo, Sagamihara, Japan

SUM:

... layer composed of a material of EL function dispersed in a binder.

As the material of EL function, there have been heretofore inorganic metal materials such as ZnS containing Mn, Cu, ReF3 and (Re: rare earths) or the like as an activating agent, and the like.

In the case of a thin film type EL device, the structure is suitable for the following purposes, that is, a thin luminescent layer can be formed so as to ...

LEVEL 1 - 42 OF 68 PATENTS

4,700,436

<=2> GET 1st DRAWING SHEET OF 4

Oct. 20, 1987

Magnetic fastener

INVENTOR: Morita, Tamao, 47-1, Arakawa 6-Chome, Arakawa-ku, Tokyo, Japan

SUM:

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the utilization of permanent magnets made of hard magnetic powder of ferrite, alnico, rare-earth and the like materials solidified with synthetic resin and then magnetized. More particularly, it relates to an improvement is magnetic material fastener means made of permanent magnet which is provided with magnetic plates at its magnetic poles.

2. Description of the Prior Art

...

PAGE

LEVEL 1 - 43 OF 68 PATENTS

4,681,625

<=2> GET 1st DRAWING SHEET OF 11

Jul. 21, 1987

Methods for simultaneously desulfurizing and degassing steels

INVENTOR: Wilson, William G., 820 Harden Dr., Pittsburgh, Pennsylvania 15229

SUM:

... difficult to get into solution and also those whose recoveries from their addition have been less than the amount added to the steel such as electrolytic manganese, ferro-niobium, ferro-tungsten and the like. The metals that may be added include aluminum, calcium, barium, rare earths and the like. The recovery of elements in the steel from additions of metals and ferro-alloys is reduced in many cases in conventional steel making technology by their contact with slags high in oxides such as iron ...

... [*21] metals to be added in the tube to enhance desulfurization are those which are known to have the ability to reduce the oxygen content of the steel, but also have the ability to form sulfides which would float out of the steel into the slag which include magnesium, calcium, barium, rare earths and the like.

[*22] 22. The method as claimed in claims 1 or 5 wherein the ferro-alloys and elemental metals to be added in the tube are those necessary to obtain the desired chemical analysis of the finished steel such as ferro- ...

LEVEL 1 - 44 OF 68 PATENTS

4,598,914

<=2> GET 1st DRAWING SHEET OF 10

Jul. 8, 1986

Sealing and bearing means by use of ferrofluid

INVENTOR: Furumura, Kyozaburo, Ninomiya, Japan
Sugi, Hiromi, Fujisawa, Japan
Murakami, Yasuo, Fujisawa, Japan
Asai, Hiromitsu, Fujisawa, Japan

DETDESC:

... polyamide resin, fluorine resin, polyethersulfone resin, polyphenylene

A22

sulfide resin or the l[redacted]. The magnetic material to be [redacted]ed with the aforesaid synthetic resin material is made of barium ferrite powder, strontium ferrite powder, rare earths or the like.

The mixture ratio of the synthetic resin and the aforesaid normal magnetic substance is different in case the magnet is used for bearing purposes and sealing purposes.

In case the magnet is employed as bearing, it is to have enough ...

LEVEL 1 - 45 OF 68 PATENTS

4,582,688

<=2> GET 1st DRAWING SHEET OF 1

Apr. 15, 1986

Process for recovery of mineral values

INVENTOR: Venkatesan, Valadi N., Arlington, Texas

DETDESC:

... present, molybdenum can be selectively leached from the ore utilizing a leaching solution containing sodium bicarbonate and oxygen. Thus, for example, substances such as vanadium, molybdenum, selenium, nickel, copper, uranium, the rare earths and the like may be recovered using the process of the present invention. The main criteria is that at least one of the minerals found in the ore may be solubilized without the solubilization of at least one other mineral.

Thus, the present ...

... part of the uranium is present as a refractory uranium-mineral complex. For example, other minerals found in the form of a uranium-mineral complex, include copper, nickel, thorium, scandium, the rare earths, and the like.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble tetravalent form and the soluble hexavalent form. Uranium is also found in association with the silicates, ...

LEVEL 1 - 46 OF 68 PATENTS

4,570,692

<=2> GET 1st DRAWING SHEET OF 6

Feb. 18, 1986

Methods of pouring metal

INVENTOR: Wilson, William G., 820 Harden Dr., Pittsburgh, Pennsylvania 15229

DETDESC:

... teeming operation and good distribution throughout the entire ingot can be expected. When the stability of the oxides in the slags is high, even the most reactive alloys such as aluminum, titanium, zirconium, magnesum, calcium or rare earths and the like will be transferred to the steel from the slag with maximum retention of the alloying element in the metal being teemed. The addition of these alloys along with these stable oxides that will not react with these alloying elements, the elimination of the flow ...

LEVEL 1 - 47 OF 68 PATENTS

4,491,563

Jan. 1, 1985

Process for deodorizing a paraffinic hydrocarbon feedstock

INVENTOR: Reusser, Rob[redacted]E., Bartlesville, Oklahoma
Murtha, Timothy P., Bartlesville, Oklahoma
Todd, Elizabeth A., Bartlesville, Oklahoma

DETDESC:
... examples are given to provide a better and more complete disclosure of this invention but should not be interpreted to limit its scope.
EXAMPLE I

This example describes a typical catalyst preparation whereby NiO and a rare earth like CeO is deposited on a support. This general procedure is also described in U.S. Pat. No. 4,217,248 column 7, line 49 to column 8, line 41. Two hundred grams of 13 x ...

LEVEL 1 - 48 OF 68 PATENTS

4,489,042

Dec. 18, 1984

Process for recovery of mineral values from subterranean formations

INVENTOR: Savins, Joseph G., Dallas, Texas
Johnson, Warren F., Dallas, Texas

DETDESC:
... formations. However, it should be clear that the invention is applicable to the solution leaching of other mineral values capable of forming soluble reaction products with leaching solutions. Thus, for example, substances such as vanadium, molybdenum, nickel, copper, the rare earths and the like are recovered using the process of the present invention.

As an illustration, the leach chemistry of a uranium ore body can be described by the following equations using hydrogen peroxide (H2O2) as oxidant:

...

PAGE

LEVEL 1 - 49 OF 68 PATENTS

4,486,026

<=2> GET 1st DRAWING SHEET OF 10

Dec. 4, 1984

Sealing and bearing means by use of ferrofluid

INVENTOR: Furumura, Kyozaburo, Ninomiya, Japan
Sugi, Hiromi, Fujisawa, Japan
Murakami, Yasuo, Fujisawa, Japan
Asai, Hiromitsu, Fujisawa, Japan

DETDESC:
... polyamide resin, fluorine resin, polyethersulfone resin, polyphenylene sulfide resin or the like. The magnetic material to be mixed with the aforesaid synthetic resin material is made of barium ferrite powder, strontium ferrite powder, rare earths or the like.

The mixture ratio of the synthetic resin and the aforesaid normal magnetic substance is different in case the magnet is used for bearing purposes and sealing purposes.

In case the magnet is employed as bearing, it is to have enough ...

PAGE 54

LEVEL 1 - 50 OF 68 PATENTS

4,481,437

A 24

<=2> GET 1st DRAWING SHEET OF 3

Nov. 6, 1984

Variable flux permanent magnets electromagnetic machine

INVENTOR: Parker, Rollin J., Greenville, Michigan

DETDESC:
... cylindrical housing 12 in which is mounted, by any appropriate convenient means, a cylindrical tubular stator 14 comprising high strength permanent magnets such as ceramic, or ceramic rare earth, cobalt-rare earth, or the like [magents] magnets. Each one of a pair of end cap members 16 and 18 fastened at an end of the housing 12 by bolts or screws 20 supports respectively an end magnet ring 22 an ...

LEVEL 1 - 51 OF 68 PATENTS

4,455,392

Jun. 19, 1984

Process for preparing a supported silver catalyst

INVENTOR: Warner, Glenn H., St. Albans, West Virginia
Bhasin, Madan M., Charleston, West Virginia
Lieberman, Bernard, Kew Gardens, New York

SUM:
... as lithium, sodium, potassium, rubidium and/or cesium; one or more alkaline earth metals, such as, barium, magnesium and strontium; or one or more of the other known promoters, such as thallium, gold, tin, antimony and rare earths; and the like. For purposes of convenience, the catalyst preparation process of the invention is described below in terms of a silver-first method of preparation wherein the promoter is selected from among alkali metals, it being recognized that other promoters of ...

LEVEL 1 - 52 OF 68 PATENTS

4,438,077

Mar. 20, 1984

Two stage selective oxidative leach method to separately recover uranium and refractory uranium-mineral complexes

INVENTOR: Tsui, Tien-Fung, Richardson, Texas

SUM:
... least part of the uranium is present as a refractory uranium-mineral complex. For example, other minerals found in a uranium-mineral complex include copper, nickel, thorium, scandium, the rare earths, and the like.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble tetravalent form and the soluble hexavalent form. Uranium is also found in association with the silicates, ...

LEVEL 1 - 53 OF 68 PATENTS

4,427,236

Jan. 24, 1984

In-situ uranium leaching

INVENTOR: Dotson, Billy J., Grand Prairie, Texas

DETDESC:

... be clear that the invention is applicable to the solution mining of other mineral values capable of forming soluble reaction products with carbonated leaching solutions. Thus, for example, substances such as vanadium, molybdenum, nickel, copper, the rare earths and the like are recovered using the process of the present invention.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble quadrivalent form and the soluble sexivalent form. ...

LEVEL 1 - 54 OF 68 PATENTS

4,419,276

Dec. 6, 1983

Silver catalyst for the manufacture of ethylene oxide and a process for preparing the catalyst

INVENTOR: Bhasin, Madan M., Charleston, West Virginia
Warner, Glenn H., St. Albans, West Virginia

SUM:

... as lithium, sodium, potassium, rubidium and/or cesium; one or more alkaline earth metals, such as, barium, magnesium and strontium; or one or more of the other known promoters, such as thallium, gold, tin, antimony and rare earths; and the like. For purposes of convenience, the catalyst preparation process of the invention is described below in terms of a silver-first method of preparation wherein the promoter is selected from among alkali metals, it being recognized that other promoters of ...

PAGE 59

LEVEL 1 - 55 OF 68 PATENTS

4,405,380

Sep. 20, 1983

High strength, low alloy steel with improved surface and mechanical properties

INVENTOR: Griffith, Cecil B., North Royalton, Ohio
Thomas, Jerry D., North Olmsted, Ohio
Demianczuk, Dionisyj W., Parma, Ohio
Abraham, John K., Broadview Heights, Ohio
Franklin, Joseph E., Medina, Ohio

DETDESC:

... present invention is directed to a steel with carbon in the range of 0.03 to 0.06%, the last being an upper limit which also appears crucial for attainment of so-called auto-sulfide-shape control and thus avoidance of the use of rare earths or the like with their consequent expense and tendency to produce unwanted non-metallic surface inclusions.

The base metal may thus consist of the defined composition, with manganese in the range of 0.2 to 0.6%, very preferably not more than 0.45%, while the ...

PAGE 60

LEVEL 1 - 56 OF 68 PATENTS

4,376,264

<=2> GET 1st DRAWING SHEET OF 6

Mar. 8, 1983

Method of checking the authenticity of papers and physically identifiable paper for use in said method

INVENTOR: Dokter, Hendrik D., Ugchelen, Netherlands
Hildering, Roelof, Frederikslaan, Netherlands
Mackor, Adrianus, Hollandsche Rading, Netherlands

SUM:
... be some which show a suitable ESR spectrum, although to the knowledge of the present inventors this has never been investigated. However, a further requirement is that a useful ESR spectrum should be obtained at room temperature. Many compounds of rare earths and the like show a useful ESR spectrum only at low temperatures, such as the temperature of liquid nitrogen, but of course an identification of banknotes and the like is hardly of any practical value, if it cannot be carried out at normal room ...

LEVEL 1 - 57 OF 68 PATENTS

4,367,163

<=2> GET 1st DRAWING SHEET OF 1

Jan. 4, 1983

Silica-clay complexes

INVENTOR: Pinnavaia, Thomas J., East Lansing, Michigan
Mortland, Max M., East Lansing, Michigan
Endo, Tadashi, East Lansing, Michigan

DETDESC:
... be used as a catalyst support for various catalytically active metals such as a Group VIII metal such as platinum, palladium, nickel, iron or cobalt; molybdenum; tungsten; a rare-earth and the like. Moreover, the intercalated product can be used in admixture with other common adsorbents or matrix materials such as silica, alumina, silica-alumina hydrogel and the like. The catalysts which can be prepared by ...

LEVEL 1 - 58 OF 68 PATENTS

4,358,158

<=2> GET 1st DRAWING SHEET OF 1

Nov. 9, 1982

Solution mining process

INVENTOR: Showalter, William E., Seal Beach, California

DETDESC:
... invention is applicable to the solution mining of other mineral values capable of forming soluble reaction products with the dilute carbonic acid leaching solution. Thus, for example, substances such as vandium, molybdenum, nickel, copper, the rare earths and the like can be recovered using the process of the present invention.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble quadrivalent form and the soluble ...

LEVEL 1 - 59 OF 68 PATENTS

4,358,157

<=2> GET 1st DRAWING SHEET OF 1

Nov. 9, 1982

Solution mining process

INVENTOR: Showalter, William E., Seal Beach, California

DETDESC:
... invention is applicable to the solution mining of other mineral values capable of forming soluble reaction products with the dilute carbonic acid leaching solution. Thus, for example, substances such as vanadium, molybdenum, nickel, copper, the rare earths and the like can be recovered using the process of the present invention.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble quadrivalent form and the soluble ...

LEVEL 1 - 60 OF 68 PATENTS

4,328,079

<=2> GET 1st DRAWING SHEET OF 1

May 4, 1982

Method for pumping impurities, especially noble gases, from hydrogen or mixtures of hydrogen and its isotopes

INVENTOR: Hemmerich, Johann, Stetternich, Federal Republic of Germany

DETDESC:
... 2 is adjusted by the fluid within the chamber 13 to the temperature for the desired hydrogen partial pressure. In this variation, the cathodes are formed from hydride-forming metals and alloys, for example, rare earth and rare earth-like metals and binary and ternary alloys of them with the addition of transition metals like iron, nickel, cobalt, etc. Upon formation of the sputtered film 12, hydrogen and its isotopes form hydrides with the film by chemisorption that can ...

LEVEL 1 - 61 OF 68 PATENTS

4,279,668

<=2> GET 1st DRAWING SHEET OF 7

Jul. 21, 1981

Directionally solidified ductile magnetic alloy

INVENTOR: Kurz, Wilfried, Lausanne, California, Switzerland
Glardon, Remi, Berkeley, California

SUM:
... relates to a process for the fabrication of magnetic alloys for permanent magnets and to the magnetic bodies obtained by this process.

More particularly the invention relates to ternary magnetic alloys consisting of rare-earth or rare-earth-like elements, cobalt and at least one metal selected from the group which consists of iron, nickel, aluminum, copper, molybdenum or manganese. Preferably the latter metal phase includes 0.1 to 10% (atomic) of the total alloy as ...

LEVEL 1 - 62 OF 68 PATENTS

4,208,225

<=2> GET 1st DRAWING SHEET OF 6

Jun. 17, 1980

Directionally solidified ductile magnetic alloys magnetically hardened by precipitation hardening

INVENTOR: Kurz, Wilfried, Lausanne, Switzerland
Glardon, Remi, Corseaux, Switzerland

SUM:
... relates to a process for the fabrication of magnetic alloys for permanent magnets and to the magnetic bodies obtained by this process.

More particularly the invention relates to ternary magnetic alloys consisting of rare-earth or rare earth-like elements, cobalt and at least one metal selected from the group which consists of iron, nickel, aluminum, copper, molybdenum or manganese.
BACKGROUND OF THE INVENTION

Ferromagnetic alloys of the cobalt/rare-earth type have a high energy ...

LEVEL 1 - 63 OF 68 PATENTS

4,105,253

<=2> GET 1st DRAWING SHEET OF 1

Aug. 8, 1978

Process for recovery of mineral values from underground formations

INVENTOR: Showalter, William E., Seal Beach, California

DETDESC:
... be clear that the invention is applicable to the solution mining of other mineral values capable of forming soluble reaction products with carbonated leaching solutions. Thus, for example, substances such as vanadium, molybdenum, nickel, copper, the rare earths and the like are recovered using the process of the present invention.

Uranium minerals frequently occur in the highly siliceous rocks and sedimentary deposits, generally as a mixture of the insoluble quadrivalent form and the soluble sexivalent form. ...

LEVEL 1 - 64 OF 68 PATENTS

4,050,052

<=2> GET 1st DRAWING SHEET OF 1

Sep. 20, 1977

Electrical temperature measuring resistor structure, particularly for resistance thermometers

INVENTOR: Reichelt, Walter, Hanau, Germany, Federal Republic of
Sauer, Gunter, Maintal, Germany, Federal Republic of

DETDESC:
... temperatures can be applied. This cover layer, shown in FIG. 2 schematically at 3, may consist for example of an epoxy resin, glass, or metal oxides of the group of aluminum, beryllium, thorium, rare earths, or the like. The cover layer 3 may be applied by vapor deposition, dusting, or spraying; its primary characteristics should be to be resistant against thermal and mechanical effects. The cover layer should additionally, preferably, provide ...

LEVEL 1 - 65 OF 68 PATENTS

4,014,706

Mar. 29, 1977

Solid solution ceramic materials

INVENTOR: Waldron, Robert D., Scottsdale, Arizona

SUM:

... dimensions of said structure and all physical and chemical properties of the solution are continuous functions of composition. The lattice symmetry may change within said composition range by uniform distortion of the structure as the composition changes.

Rare earth-like (metallic) elements as used herein means elements of atomic numbers 21, 39, and/or 57-71.

Yttrium earth (metallic) elements as used herein means elements of atomic numbers 39 and/or 64-71.

...

LEVEL 1 - 66 OF 68 PATENTS

3,983,077

<=2> GET 1st DRAWING SHEET OF 2

Sep. 28, 1976

Process for making ceramic resistor materials

INVENTOR: Fuller, Peter G., Lakeville, Massachusetts
Stoeckler, Hans A., Woonsocket, Rhode Island

DETDESC:

... invention also typically include additions of silicon oxide or manganese oxide or the like and other dopants typically incorporated in such ceramic compositions include lanthanum, cerium, dysprosium, and praesodymium as well as other rare earths and the like commonly used in ceramic resistor materials of positive temperature coefficient of resistivity. Typically, the ceramic titanate materials produced by the process are provided with stoichiometric or slightly titanium-rich compositions, the compositions preferably having an ...

LEVEL 1 - 67 OF 68 PATENTS

3,896,616

<=2> GET 1st DRAWING SHEET OF 1

Jul. 29, 1975

Process and apparatus

INVENTOR: Keith, Carl D., Summit, New Jersey
Mooney, John J., Wyckoff, New Jersey

DETDESC:

... 0.1 to 1.5%. The catalytic element may contain, with or without the platinum group metals, one or more catalytic materials which may include, for example, chromium, manganese, vanadium, copper, iron, cobalt, nickel, rare earths, and the like.

The relative sizes of the initial and subsequent catalytic elements may be such that their volume ratio, i.e. the superficial volume of the subsequent catalyst to the initial catalyst, including void spaces within the catalytic masses, is often at least about ...

LEVEL 1 - 68 OF 68 PATENTS

3,791,143

<=2> GET 1st DRAWING SHEET OF 1

Feb. 12, 1974

PROCESS AND APPARATUS

INVENTOR: Keith, Carl D., Summit, New Jersey
Mooney, John J., Wyckoff, New Jersey

DETDESC:

... 1.5 percent. The catalytic element may contain, with or without the platinum group metals, one or more catalytic materials which may include, for example, chromium, manganese, vanadium, copper, iron, cobalt, nickel, rare earths, and the like.

The relative sizes of the initial and subsequent catalytic elements may be such that their volume ratio, i.e., the superficial volume of the subsequent catalyst to the initial catlyst, including void spaces within the catalytic masses, is often at least about ...

* 72 PAGES 1431 LINES JOB 97027 100G6J *
* 5:29 P.M. STARTED 5:30 P.M. ENDED 11/22/97 *

Attachment B

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Mon, 24 Nov 1997 12:52:15 -0500
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Mon, 24 Nov 1997 12:52:15 -0500
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**********03404**********

LEVEL 1 - 1 OF 4 PATENTS

5,344,815

<=2> GET 1st DRAWING SHEET OF 4

Sep. 6, 1994

Fabrication of high T C superconducting helical resonator coils

INVENTOR: Su, Sophia R., Weston, Massachusetts
O'Connor, Margaret, Worcester, Massachusetts
Butler, Scott, N. Oxford, Massachusetts

... [*13] oxygen for at least 2 hr.

[*14] 14. A method in accordance with claim 11 wherein said mixture further comprises at least about 3 w/o grain aligned clusters of a like rare earth barium copper oxide superconductor.

[*15] 15. A method in accordance with claim 11 wherein said rare earth

B1

barium copper oxide su[redacted]nductor is an yttrium barium [redacted]per oxide superconductor.

[*16] 16. A ...

LEVEL 1 - 2 OF 4 PATENTS

5,236,091

<=2> GET 1st DRAWING SHEET OF 5

Aug. 17, 1993

Eddy current separator and method of making a rotor

INVENTOR: Kauppila, Raymond, Marquette, Michigan
Nowak, Gregory, Girard, Pennsylvania

... as follows:

[*1] 1. A rotor for an eddy current separator comprising a rotor body having generally cylindrical, outer peripheral surfaces designed to be rotated at a design speed;

plate-like rare earth permanent magnets;

adhesive means attaching said plate-like rare earth permanent magnets to said outer peripheral surfaces of said rotor body at a bond line;

said plate-like rare earth permanent magnets being disposed in longitudinal rows extending from one end of said rotor to the other;

said plate-like rare earth permanent magnets in a particular row having a polarity on their outer end opposite the polarity of an outer end of said plate-like permanent magnets in adjacent rows;

a fiber means ...

... [*3] equal to that of carbon.

[*4] 4. A rotor for an eddy current separator comprising a rotor body having generally cylindrical, outer peripheral surfaces designed to be rotated at a design speed;

plate-like rare earth permanent magnets;

adhesive means attaching said plate-like rare earth permanent magnets to said outer peripheral surfaces of said rotor body at a bond line;

said plate-like rare earth permanent magnets being disposed in longitudinal rows extending from one end of said rotor to the other;

said plate-like rare earth permanent magnets in a particular row having a polarity on their outer end opposite the polarity of an outer end of said plate-like permanent magnets in adjacent rows;

fiber means wrapped ...

... [*7] body having a polygonal outer periphery;

said polygonal outer periphery having a plurality of circumferentially disposed adjacent flat surfaces of equal width extending longitudinally of

said rotor from end to end thereof;

plate-like rare earth permanent magnets having a width substantially equal to the width of sides of said polygonal outer periphery and attached to said flat

surfaces by adhesive;

said plate-like rare earth permanent magnets extending substantially continuously from end to end of said rotor;

said shell being made of an electrically non-conductive material and adapted to receive said rotor;

a heat shield being ...

LEVEL 1 - 3 OF 4 PATENTS

5,162,298

<=2> GET 1st DRAWING SHEET OF 5

Nov. 10, 1992

Grain boundary junction devices using high T c superconductors

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Chi, Cheng-Chung J., Yorktown Heights, New York
Dimos, Duane B., Upper Montclair, New Jersey
Mannhart, Jochen D., Metzingen, New York, Federal Republic of Germany
Tsuei, Chang C., Chappaqua, New York

... [*4] copper oxide material having a superconducting onset temperature greater than 77 K.

[*5] 5. The device of claim 4, where said superconducting material includes an atom selected from the group consisting of rare earth atoms and rare earth-like atoms.

[*6] 6. The device of claim 4, where said superconducting material includes an alkaline earth atoms.

[*7] 7. The device of claim 4, where said superconducting material includes bismuth.

[*8] 8. The device of claim 1, where ...

LEVEL 1 - 4 OF 4 PATENTS

4,681,625

<=2> GET 1st DRAWING SHEET OF 11

Jul. 21, 1987

Methods for simultaneously desulfurizing and degassing steels

INVENTOR: Wilson, William G., 820 Harden Dr., Pittsburgh, Pennsylvania 15229

... [*21] metals to be added in the tube to enhance desulfurization are those which are known to have the ability to reduce the oxygen content of the steel, but also have the ability to form sulfides which would float out of the steel into the slag which include magnesium, calcium, barium, rare earths and the like.

[*22] 22. The method as claimed in claims 1 or 5 wherein the ferro-alloys and elemental metals to be added in the tube are those necessary to obtain the desired chemical analysis of the finished steel such as ferro- ...

* 5 PAGES 99 LINES JOB 53156 100G6J *
* 12:52 P.M. STARTED 12:52 P.M. ENDED 11/24/97 *

Attachment C

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Received: by prod.lexis-nexis.com (Internal Mail Agent-1);
Sat, 22 Nov 1997 17:36:59 -0500
Date: Sat, 22 Nov 97 17:36:58 EST
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107

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**********06089**********
FOCUS - 1 OF 107 PATENTS

5,686,394

<=2> GET 1st DRAWING SHEET OF 1

Nov. 11, 1997

Process for manufacturing a superconducting composite

INVENTOR: Sibata, Kenichiro, Hyogo, Japan
Sasaki, Nobuyuki, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

SUM:

... Ho-Cu-O system or Ba-Dy-Cu-O system compound oxide which possess the quasi-perovskite type crystal structure including an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

C1

The abovementioned ... superconductors can be prepa... from a powder mixture Consisting of oxides and/or carbonates containing constituent elements of said superconductor. The powder mixture may include optionally oxides and/or carbonates of at least ...

FOCUS - 2 OF 107 PATENTS

5,679,980

<=2> GET 1st DRAWING SHEET OF 5

Oct. 21, 1997

Conductive exotic-nitride barrier layer for high-dielectric-constant material electrodes

INVENTOR: Summerfelt, Scott R., Dallas, Texas

DETDESC:

...

TABLE

...

* * Conductive perovskite like

FOCUS - 3 OF 107 PATENTS

5,665,628

<=2> GET 1st DRAWING SHEET OF 5

Sep. 9, 1997

Method of forming conductive amorphous-nitride barrier layer for high-dielectric-constant material electrodes

INVENTOR: Summerfelt, Scott R., Dallas, Texas

DETDESC:

...

TABLE

...

* * Conductive perovskite like

FOCUS - 4 OF 107 PATENTS

5,661,112

<=2> GET 1st DRAWING SHEET OF 3

Aug. 26, 1997

Superconductor

INVENTOR: Hatta, Shinichiro, 201-1028, Higashinakafuri-2-chome, Hirakata-shi, Japan
Higashino, Hidetaka, A2-505, 117, Hitotsuyacho, Matsubara-shi, Japan
Hirochi, Kumiko, 22, Keihanhondori-1-chome, Moriguchi-shi, Japan
Adachi, Hideaki, 3-1-505, Mitsuiminamimachi, Neyagawa-shi, Japan

... [*1] film being a transition metal element selected from Pt, Au, Ag, Pd, Ni and Ti the composition A-B-Cu-O of said oxide film being in the form of layered perovskite-like structure.

[*2] 2. A superconductor according to claim 1, wherein an additional metal film is formed on said oxide film, or the oxide films and metal films are laminated alternately to form a multi-layer structure.

[*3] ...

FOCUS - 5 OF 107 PATENTS

C2

5,648,114

<=2> GET 1st DRAWING SHEET OF 4

Jul. 15, 1997

Chemical vapor deposition process for fabricating layered superlattice materials

INVENTOR: Paz De Araujo, Carlos A., Colorado Springs, Colorado
Watanabe, Hitoshi, Tokyo, Japan
Scott, Michael C., Colorado Springs, Colorado
Mihara, Takashi, Saitama, Japan

DETDESC:

... Layered superlattice materials may be summarized more generally under the formula: [See Original Patent for Chemical Structure Diagram]

where A1, A2 . . . A represent A-site elements in the perovskite-like structure, which may be elements such as strontium, calcium, barium, bismuth, lead, and others, S1, S2 . . . Sk represent super-lattice generator elements, which usually is bismuth, but can also be materials such as yttrium, scandium, lanthanum, antimony, chromium, thallium, and other elements with a valence of + 3, B1, B2 . . . BI represent B-site elements in the perovskite-like structure, which may be elements such as titanium, tantalum, hafnium, tungsten, niobium, zirconium, and other elements, and Q represents an anion, which may be elements such as oxygen, fluorine, chlorine and hybrids of these elements, such ...

... [*14] s2 > . . . Sk[xk]< + sk> B1[y1]< + b1> B2[y2]< + b2 > . . . B1[y1]< + b1> Q[z]< - 2> , where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . B1 represent B-site elements in said perovskite-like structure, Q represents an anion, the superscripts indicate valences of the respective elements, the subscripts indicate an average number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero, and wherein said A- ...

PAG

FOCUS - 6 OF 107 PATENTS

5,647,904

<=2> GET 1st DRAWING SHEET OF 2

Jul. 15, 1997

Method for manufacturing superconducting ceramics in a magnetic field

INVENTOR: Yamazaki, Shunpei, Tokyo, Japan

SUM:

... 30o K. by a method in which a mixture of chemicals in a suitable composition is compacted and fired. These superconducting ceramics form a quasi-molecular atomic unit in a perovskite-like structure whose unit cell is constructed with one layer in which electrons have essentially one-dimensional motion, whereas a number of crystalline grains are arranged at randam with diverse crystalline directions, and therefore the critical current density is ...

... cm from conventional several millimeters. The breadth and thickness may be more flexibly controlled by skilled persons according to the invention in comparison with the prior art technique.

Superconducting materials are constructed in perovskite-like structures as illustrated in FIG. 1 in accordance with the present invention. The structure comprises copper atoms 2, an intervening copper atom 3, oxygen atoms 5 and 6 surrounding the copper ...

C3

DRWDESC:
BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram showing the configuration of the perovskite-like molecular sturcture in accordance with the present invention.

FIGS. 2(A) and 2(B) are top and side sectional views showing an apparatus for manufacturing superconducting ceramics in accordance with the present invention.

FOCUS - 7 OF 107 PATENTS

5,646,094

<=2> GET 1st DRAWING SHEET OF 4

Jul. 8, 1997

Rare earth substituted thallium-based superconductors

INVENTOR: Tallon, Jeffrey Lewis, 3 Marine Drive, York Bay, Eastbourne, New Zealand
Presland, Murray Robert, 4/1 Mahina Bay Road, Mahina Bay, Eastbourne, New Zealand

ABST:
... lanthanide rare earth elements and where 0.3 </= a,b </= 0.7, 0.05 </= c </= 1.1,2 - c </= d </= 1.95, 0.05 </= e </= 1, 1.9 </= f </= 2.1 and 6.5 </= g </= 7.5. These compounds, which are layered perovskite-like oxides, exhibit a high chemical stability, form readily into nearly single phase, do not require adjustment of oxygen stoichiometry after synthesis and compositions may be chosen allowing superconductivity at temperatures ...

SUM:
... for example, do not require adjustment of oxygen stoichiometry after synthesis, and compositions may be chosen allowing superconductivity at temperatures exceeding 100 K.

The novel compounds described herein have the same tetragonal layered perovskite-like structure of the parent compound T10.5Pb0.5CaSr2Cu2O7 comprising in sequence: a T10.5Pb0.5O layer with Tl/Pb occupying square comer-shared sites and oxygen distributed about the face centre; a SrO layer with ...

FOCUS - 8 OF 107 PATENTS

5,626,906

<=2> GET 1st DRAWING SHEET OF 3

May 6, 1997

Electrodes comprising conductive perovskite-seed layers for perovskite dielectrics

INVENTOR: Summerfelt, Scott R., Dallas, Texas
Beratan, Howard R., Dallas, Texas

ABST:
... layer and the conductive oxide layer each comprise the same metal. The metal should be conductive in its metallic state and should remain conductive when partially or fully oxidized. Generally, the perovskite-seed layer has a perovskite or perovskite-like crystal structure and lattice parameters which are similar to the perovskite dielectric layer formed thereon. At a given deposition temperature, the crystal quality and other properties of the perovskite dielectric will generally be enhanced by depositing it on ...

SUM:
... As used herein, the term "high-dielectric-constant" means a dielectric constant greater than about 50 at device operating temperature. As used herein the term "perovskite" means a material with a perovskite or perovskite-like

crystal structure. As used herein the term "dielectric" when used in reference to a perovskite, means a non-conductive perovskite, pyroelectric, ferroelectric, or high-dielectric-constant oxide material. The deposition of a ...

... structure. To facilitate perovskite crystal formation, perovskite dielectrics such as PZT have been deposited on some conductive perovskites such as YBa2Cu3O[7 - x]and (La,Sr)CoO3. Deposition of PZT on a substrate with a perovskite or perovskite-like crystal structure normally minimizes the formation of the pyrochlore phase and improves the properties of the perovskite dielectric. However, the materials used thus far for the deposition surface have several problems. For example, they typically involve new cations such ...

... layer each comprise the same metal. The metal should be conductive in its metallic state and should remain conductive when partially or fully oxidized, and when in a perovskite. Generally, the perovskite-seed layer has a perovskite or perovskite-like crystal structure and lattice parameters which are similar to the perovskite dielectric layer formed thereon. At a given deposition temperature, the crystal quality and other properties of the perovskite dielectric will generally be enhanced by depositing it on ...

DETDESC:

...

TABLE

...

ruthenate seed layer perovskite-like materials

FOCUS - 9 OF 107 PATENTS

5,611,854

Mar. 18, 1997

Seed crystals with improved properties for melt processing superconductors for practical applications

INVENTOR: Veal, Boyd W., Downers Grove, Illinois
Paulikas, Arvydas, Downers Grove, Illinois
Balachandran, Uthamalingam, Hinsdale, Illinois
Zhong, Wei, Chicago, Illinois

DETDESC:

... Although PbTiO3 is shown in the Table, other perovskites of the form RTiO3, when R is La or a rare earth are good candidates. EuTiO3 has a lattice parameter of 3,897 [Angstrom] . NdGaO3, and other perovskite-like oxides with the prototype GdFeO3 structure should also serve well. NdGaO3 is available as a commercial substrate material. Others may also be commercially available, particularly LaCrO3 which has many industrial applications.

Oxides with the GdFeO3 (...

FOCUS - 10 OF 107 PATENTS

5,602,080

<=2> GET 1st DRAWING SHEET OF 1

Feb. 11, 1997

Method for manufacturing lattice-matched substrates for high-T[c] superconductor films

INVENTOR: Bednorz, Johannes G., Wolfhausen, Switzerland
Mannhart, Jochen D., Thalwil, Switzerland
Mueller, Carl A., Hedingen, Switzerland
Schlom, Darrell G., State College, Pennsylvania

SUM:

... a close match-preferably approaching an ideal match-of the lattice parameters of a substrate-without a buffer layer-to a selected high-T[c

]superconductor materi[illegible] having a perovskite or a perov[illegible]te-like crystal structure can be achieved by a method comprising the following steps: Determining the relevant lattice constant or constants of the selected superconductor material; choosing a desired orientation of the superconductor layer to ...

... for the deposition of the superconductor.

One preferred method of the invention for manufacturing a lattice-matched substrate for a film of a selected high-T[c]superconductor material having a perovskite or perovskite-like crystal structure at a selected orientation relative to the film dimensions comprises the steps set forth below.

The preferred method of the invention includes the step of determining a relevant lattice constant or constants of the selected ...

... make the codeposition from separate sources each containing one or more of the materials combined to form the buffer layer.

Preferred substrate component materials include strontium titanate SrTiO3 and lanthanum aluminate LaAlO3 for perovskite-like superconductor materials such as YBa2Cu3O7 - delta .

In the following description, a preferred method for manufacturing crystalline substrate material having essentially the same lattice constant as the corresponding lattice constant of a ...

FOCUS - 11 OF 107 PATENTS

5,593,951

<=2> GET 1st DRAWING SHEET OF 4

Jan. 14, 1997

Epitaxy of high T[C]superconductors on silicon

INVENTOR: Himpsel, Franz J., Mt. Kisco, New York

SUM:

... first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure.

Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O system have been found to exhibit a superconducting transition temperature in excess of 77K. R. B. ...

FOCUS - 12 OF 107 PATENTS

5,590,053

<=2> GET 1st DRAWING SHEET OF 20

Dec. 31, 1996

Method of determining a space group

INVENTOR: Ito, Tatsuya, Kawasaki, Japan
Kawai, Masahito, Kawasaki, Japan
Yasukawa, Yoshihito, Kawasaki, Japan

DETDESC:

... present invention will be described with reference to FIG. 15 to FIG. 20. Let it be assumed here that a crystal as a target of analysis is one of LaGdSrCuO4. In the case of investigation into such a perovskite-like copper oxide superconductor, it is an effective technique of investigating a new substance to laminate partial structures to grasp a laminate structure

characteristic of the [redacted]tance. The structure analysis [redacted] the target crystal by this technique will ...

FOCUS - 13 OF 107 PATENTS

5,589,284

<=2> GET 1st DRAWING SHEET OF 3

Dec. 31, 1996

Electrodes comprising conductive perovskite-seed layers for perovskite dielectrics

INVENTOR: Summerfelt, Scott R., Dallas, Texas
Beratan, Howard R., Dallas, Texas

ABST:

... layer and the conductive oxide layer each comprise the same metal. The metal should be conductive in its metallic state and should remain conductive when partially or fully oxidized. Generally, the perovskite-seed layer has a perovskite or perovskite-like crystal structure and lattice parameters which are similar to the perovskite dielectric layer formed thereon. At a given deposition temperature, the crystal quality and other properties of the perovskite dielectric will generally be enhanced by depositing it on ...

SUM:

... As used herein, the term "high-dielectric-constant" means a dielectric constant greater than about 50 at device operating temperature. As used herein the term "perovskite" means a material with a perovskite or perovskite-like crystal structure. As used herein the term "dielectric", when used in reference to a perovskite, means a non-conductive perovskite, pyroelectric, ferroelectric, or high-dielectric-constant oxide material. The deposition of a ...

... structure. To facilitate perovskite crystal formation, perovskite dielectrics such as PZT have been deposited on some conductive perovskite such as YBa2Cu3O[7-x]and (La,Sr)CoO3. Deposition of PZT on a substrate with a perovskite or perovskite-like crystal structure normally minimizes the formation of the pyrochlore phase and improves the properties of the perovskite dielectric. However, the materials used thus far for the deposition surface have several problems. For example, they typically involve new cations such ...

... layer each comprise the same metal. The metal should be conductive in its metallic state and should remain conductive when partially or fully oxidized, and when in a perovskite. Generally, the perovskite-seed layer has a perovskite or perovskite-like crystal structure and lattice parameters which are similar to the perovskite dielectric layer formed thereon. At a given deposition temperature, the crystal quality and other properties of the perovskite dielectric will generally be enhanced by depositing it on ...

DETDESC:

...

TABLE

...

ruthenate *	seed layer *	perovskites or perovskite-like materials (e.g.

FOCUS - 14 OF 107 PATENTS

5,585,300

<=2> GET 1st DRAWING SHEET OF 5

Dec. 17, 1996

Method of making conductive amorphous-nitride barrier layer for high-dielectric-constant material electrodes

INVENTOR: Summerfelt, Scott R., Dallas, Texas

DETDESC:

...

TABLE

...

* * Conductive perovskite like

FOCUS - 15 OF 107 PATENTS

5,583,096

<=2> GET 1st DRAWING SHEET OF 8

Dec. 10, 1996

Superconductive compounds and process for producing said compounds

INVENTOR: Cavazos, Ramon G., Paseo de la Reforma 403, Primer Piso, Mexico D.F. 06500

DETDESC:

... A. Muller in their article entitled "Possible High Tc Superconductivity in Ba-La-Cu-O System". (Zeitschrift fur Physik B-Condensed Matter 64,189-193 (1986), reported: " . . . perovskite-like-mixed valent copper compound. Upon cooling, the samples show a linear decrease in resistivity, then an approximately logarithmic increase, interpreted as a beginning of localization. Finally, an abrupt decrease by ...

FOCUS - 16 OF 107 PATENTS

5,563,331

<=2> GET 1st DRAWING SHEET OF 3

Oct. 8, 1996

Magnetoresistive sensor utilizing a sensor material with a perovskite-like crystal structure

INVENTOR: Von Helmolt, Rittmar, Erlangen, Federal Republic of Germany
Wecker, Joachim, Roettenbach, Federal Republic of Germany

ABST:

A magnetoresistive sensor may be constructed with material having a perovskite-like crystal structure and an increased magnetoresistive effect. The material is based on the composition (A1)[1-x](A2)[x]MnO[z], with A1 (trivalent) selected from Y, La, or a lanthanide, A2 (bivalent) from an alkaline- ...

SUM:

BACKGROUND OF THE INVENTION

The present invention relates to a magnetoresistive sensor with a layer made of a sensor material that possesses a perovskite-like crystal structure and exhibits an increased magnetoresistive effect.

The general structure and operation of magnetoresistive sensors with thin films made of ferromagnetic transition metals are explained further in, for example, the book "Sensors", Vol. ...

... x]Se (cf. "Journal of Applied Physics," Vol. 38, No. 3, Mar. 1, 1967, pp. 959-964). A corresponding effect is also evident in Nd0.5Pb0.5MnO3 crystals; these crystals have a perovskite-like structure (cf. "Physics B," Vol. 155, 1989, pp. 362-365). However, the change in electrical resistance as a function of magnetic induction observed in these material systems is confined to low ...

... occur only to a reduced extent, in a sensor material that is the subject of a German patent application No. P 43 10 318.9 (not previously disclosed).

This material possesses a perovskite-like crystal structure and exhibits an increased magnetoresistive effect. A composition based on (A1)[1-x](A2)[x]MnO[x]is to be selected for the material, such that the trivalent constituent A1 at least contains ...

... sensor according to an embodiment of the present invention includes at least two layers, a first layer and a second layer. Each of the first and second layers is made of a sensor material that possesses a perovskite-like crystal structure and exhibits an increased magnetoresistive effect. The sensor material of each of the first and second layers has a composition based on (A1)[1-x](A2)[x]MnO[z], where A1 is a trivalent ...

DETDESC:

... indicated can also contain minimal impurities with less than 0.5 atomic percent of each impurity element. Exemplary embodiments for corresponding materials are therefore La0.67Ba0.33MnO3, or Pr0.5Sr0.5MnO3, or Nd0.33Ca0.67MnO3, or (Dy0.67Mg0.33)(Mn0.8Cu0.2)O2.9. All these materials have

Pat. No. 5563331, *

FOCUS

a perovskite-like crystal structure and are characterized by an increased magnetoresistive effect M[r]of, in particular, more than 10%, and preferably more than 50%. The effect is thus considerably greater than in known Cu/Co multilayer systems.

...

... 1557-1559). According to the present invention, corresponding layers of the sensor material are advantageously deposited onto substrates whose respective crystalline unit cell has dimensions matched to the unit cell of the sensor material. Substrate materials that also have a perovskite-like crystal structure are therefore particularly suitable. Corresponding exemplary embodiments are SrTiO3, MgO, LaAlO3, NdGaO3, MgAl2O4, or Y-stabilized ZrO2 (abbreviated YSZ). In addition, however, Si substrates that are coated with a special intermediate ...

... [*1] a layer system comprising at least two layers, including:

a first layer; and

a second layer;

wherein each of said first and second layers comprises a sensor material that possesses a perovskite-like crystal structure and exhibits an increased magnetoresistive effect, such that the sensor material of each of said first and second layers has a composition based on (A1)[1-x](A2)[x]MnO[z], wherein A1 is a ...

... [*4] similar to said first layer and layers similar to said second layer.

[*5] 5. A magnetoresistive sensor according to claim 2; wherein the layer system is deposited on a substrate made of a material that has a perovskite-like crystal structure.

[*6] 6. A magnetoresistive sensor according to claim 1, wherein the first layer and the second layer have different thicknesses.

[*7] 7. A magnetoresistive sensor according to claim 6, wherein the layer system includes ...

... [*7] similar to said first layer and layers similar to said second layer.

[*8] 8. A magnetoresistive sensor according to claim 6, wherein the layer system is deposited on a substrate made of a material that has a perovskite-like crystal structure.

[*9] 9. A magnetoresistive sensor according to claim 1, wherein the layer system includes more than two layers which alternate between layers similar to said first layer and layers similar to said second layer.

[*10] 10. A magnetoresistive sensor according to claim 9, wherein the layer system is deposited on a substrate made of a material that has a

Pat. No. 5563331, *10

FOCUS

perovskite-like crystal structure.

[*11] 11. A magnetoresistive sensor according to claim 1, wherein the layer system is deposited on a substrate made of a material that has a perovskite-like crystal structure.

[*12] 12. A magnetoresistive sensor according to claim 1, wherein 0.25 </= x </= 0.75.

[*13] 13. A magnetoresistive sensor according to claim 1, wherein z = 3.

FOCUS - 17 OF 107 PATENTS

5,554,585

<=2> GET 1st DRAWING SHEET OF 1

Sep. 10, 1996

Method of forming a superconductor microstrip transmission line

INVENTOR: Simon, Randy W., Long Beach, California
Platt, Christine E., El Segundo, California
Lee, Alfred E., Torrance, California
Lee, Gregory S., West Los Angeles, California

REF-CITED:
... 61(1):28-35 (1973).
Geballe, "Paths to Higher Temperature Superconductors," Science, vol. 259, Mar. 12, 1993, pp. 1550-1551.
Geller, S., et al., "Crystallographic Studies of Perovskite-like Compounds. II. Rare Earth Aluminates," Acta. Cryst., 9:1019-1025 (1956).
Geller, S., "Crystallographic Studies of Perovskite-like Compounds. IV. Rare Earth Scandates, Vanadites, Galliates, Orthochromites," Acta Cryst., 10:243-248 (1957).
Gulyaev,, Yu V., et al., "YBa2Cu3O[7 - x]Films with a High-temperature ...

FOCUS - 18 OF 107 PATENTS

5,552,373

<=2> GET 1st DRAWING SHEET OF 2

Sep. 3, 1996

Josephson junction device comprising high critical temperature crystalline copper superconductive layers

INVENTOR: Agostinelli, John A., Rochester, New York
Mir, Jose M., Webster, New York
Lubberts, Gerrit, Penfield, New York
Chen, Samuel, Penfield, New York

DETDESC:
... can take any convenient form capable of permitting deposition of USCO" thereon as a thin film.

In a specifically preferred form of the invention SUB" is chosen from

materials that themsel[redacted]exhibit a perovskite or perov[redacted]e-like crystal structure. Strontium titanate is an example of a perovskite crystal structure which is specifically preferred for use as a substrate. Lanthanum aluminate (LaAlO3), lanthanum gallium oxide (LaGaO3) and potassium tantalate are ...

FOCUS - 19 OF 107 PATENTS

5,527,567

<=2> GET 1st DRAWING SHEET OF 6

Jun. 18, 1996

Metalorganic chemical vapor deposition of layered structure oxides

INVENTOR: Desu, Seshu B., Blacksburg, Virginia
Tao, Wei, Blacksburg, Virginia
Peng, Chien H., Blacksburg, Virginia
Li, Tingkai, Blacksburg, Virginia
Zhu, Yongfei, Blacksburg, Virginia

SUM:
... 1961), 695; G. A. Smolenski, V. A. Isupov and A. I. Agranovskaya, Fiz Tverdogo Tela, 3, (1961), 895). These compounds have a pseudo-tetragonal symmetry and the structure is comprised of stacking of perovskite-like units between (Bi2O2)<2 + > layers along the pseudo-tetragonal c-axis. A large number of these compounds do not contain any volatile components in their sublattice that exhibits spontaneous polarization. The tendency for ...

FOCUS - 20 OF 107 PATENTS

5,523,283

<=2> GET 1st DRAWING SHEET OF 1

Jun. 4, 1996

L[a]AlO3 Substrate for copper oxide superconductors

INVENTOR: Simon, Randy W., Long Beach, California
Platt, Christine E., El Segundo, California
Lee, Alfred E., Torrance, California
Lee, Gregory S., West Los Angeles, California

REF-CITED:
... 61(1):28-35 (1973).
Gaballe, "Paths to Higher Temperature Superconductors," Science, vol. 259, Mar. 12, 1993, pp. 1550-1551.
Geller, S., et al., "Crystallographic Studies of Perovskite-like Compounds. II. Rare Earth Aluminates," Acta. Cryst., 9:1019-1025 (1956).
Geller, S., "Crystallographic Studies of Perovskite-like Compounds. IV. Rare Earth Scandates, Vanadites, Galliates, Orthochromites," Acta Cryst., 10:243-428 (1957).
Gulysev, Yu V., et al., "YBa2CU30[7-x]Films with a High-temperature ...

FOCUS - 21 OF 107 PATENTS

5,523,282

<=2> GET 1st DRAWING SHEET OF 1

Jun. 4, 1996

High-frequency substrate material for thin-film layered perovskite superconductors

INVENTOR: Simon, Randy W., Long Beach, California

Platt, Christine E., E[redacted]egundo, California
Lee, Alfred E., Torrance, California
Lee, Gregory S., West Los Angeles, California

REF-CITED:
... A., et al., "The Flux Shuttle-A Josephson Junction Shift Register Employing Single Flux Quanta," Proceedings of the IEEE, 61(1):28-35 (1973).
Geller, S., "Crystallographic Studies of Perovskite-like Compounds. Rare Earth Scandates, Vanadites, Galliates, Orthochromites," Acta Cryst., 10:243-251 (1957).
Gurvitch, M., et al., "Preparation and Substrate Reactions of Superconducting Y-Ba-Cu-O Films," ...

... in the Coprecipitation of Carbonate and Hydroxide Compounds of Lanthanum and Aluminum," Russian Journal of Inorganic Chemistry, vol. 22, No. 11, pp. 1622-1625, 1977.
S. Geller et al., "Crystallographic Studies of Perovskite-like Compounds. II. Rare Earth Aluminates," Acta Cryst., vol. 9, pp. 1019-1025, 1956.
J. Kilner et al., "Electrolytes for the High Temperature Fuel Cell; Experimental and Theoretical ...

FOCUS - 22 OF 107 PATENTS

5,519,234

<=2> GET 1st DRAWING SHEET OF 30

May 21, 1996

Ferroelectric dielectric memory cell can switch at least giga cycles and has low fatigue - has high dielectric constant and low leakage current

INVENTOR: Paz de Araujo, Carlos A., Colorado Springs, Colorado
Cuchiaro, Joseph D., Colorado Springs, Colorado
Scott, Michael C., Colorado Springs, Colorado
McMillan, Larry D., Colorado Springs, Colorado

ABST:
... s2 > . . . Sk xk < + ak > B1 y1 < + b1> B2 y2 < + b2 > . . . B1 y1 < + b1> Q z < - 2> , where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . B1 represent B-site elements in a perovskite-like structure, Q represents an anion, the superscripts indicate the valences of the respective elements, the subscripts indicate the number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero. Some of these materials are extremely low ...

SUM:
... 676 (1962) and Chapter 8 pages 241-292 and pages 624 & 625 of Appendix F of the Lines and Glass reference cited above. As outlined in section 15.3 of the Smolenskii book, the layered perovskite-like materials can be classified under three general types:

(I) compounds having the formula A m - 1 Bi2M m O 3m + 3 , where A = Bi<3 + > , Ba<2 + > , Sr< ...

... strontium titanates Sr2TiO4, Sr3Ti2O7 and Sr4Ti3O10; and

(III) compounds having the formula A m M m O 3m + 2 , including compounds such as Sr2Nb2O7, La2Ti2O7, Sr5TiNb4O17, and Sr6Ti2Nb4O20.

Smolenskii pointed out that the perovskite-like layers may have different thicknesses, depending on the value of m, and that the perovskite AMO3 is in principal the limiting example of any type of layered perovskite-like structure with m = infinity. Smolenskii also noted that if the layer with minimum thickness (m = 1) is denoted by P and the bismuth-oxygen layer is denoted by B, then the type I compounds may be described as . . . BP m BP m . . . . Further

Smolenskii noted that [redacted] is a fractional number then [redacted] lattice contains perovskite-like layers of various thicknesses, and that all the known type I compounds are ferroelectrics. Similarly, Smolenskii noted that the type two compounds could be represented as . . . SP m SP m . . . where P is the perovskite-like layer of thickness m and S is the strontium-oxygen connecting layer, and that since the type I and type II compounds have similar perovskite-like layers, the existence of "hybrid" compounds such as . . . BP m SP n BP m SP m . . . "should not be ruled out", though none had been obtained at that time.

Pat. No. 5519234, *

FOCUS

Up to now, these layered ferroelectric ...

... s2 > . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2 > . . . B1 y1 < + b1> Q z < - 2> , where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . B1 represent B-site elements in a perovskite-like structure, Q represents an anion, the superscripts indicate the valences of the respective elements, the subscripts indicate the average number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero. Preferably, the A- ...

... layered superlattice material comprises a material having a localized structure, within a grain or other larger or smaller unit, which localized structure contains predominately repeatable units containing one or more perovskite-like layers and one or more intermediate non-perovskite-like layers spontaneously linked in an interdependent manner.

In another aspect the invention provides a non-volatile ferroelectric memory comprising: a ferroelectric memory cell including a layered superlattice ...

DETDESC:

... curves as shown in FIG. 5C, which show fatigue of less than 30%, which is much less than for any ferroelectric material on which endurance tests had been performed in the prior art. It was realized that the SrBi4Ti4O15 was one of the layered perovskite-like materials catalogued by Smolenskii, and thought that perhaps the natural layered structure of these materials might be the source of the low-fatigue property. Other devices were fabricated having the structure shown in FIG. 2C, i.e. a ...

... flexible than the lattice of a ferroelectric material. Turning to FIG. 13, a layered superlattice material 92 is illustrated. Smolenskii recognized that what we call the layered superlattice materials spontaneously form into layers 94 with a perovskite-like structure which alternate with layers 96 having a simpler structure. Depending on the material, the perovskite-like layers 94 may include one or a plurality of linked layers of perovskite-like octahedrons 90. As an example, FIG. 14 shows a unit cell of the material ABi2B2< + 5> O9, which is the formula for strontium bismuth tantalate (SrBi2Ta2O9) and other layered superlattice materials, such as tantalum, niobium, and tungsten, having a element with a valence of + 5 in the B-site. In this structure, each perovskite-like layer 94 includes two layers of octahedrons 90 which are separated by layers 96 of a material that does not have a perovskite-like structure. In this material the primitive unit cell consists of two perovskite layers 94 and two non-perovskite layers 96, since the structure shifts between the layers 98A and 98B. In FIG. ...

... O15, which is the formula for strontium bismuth titanate (SrBi4Ti4O15) and other layered superlattice materials having an element, such as titanium, hafnium, and zirconium, having a valence of + 4 in the B-sites. In this material each the perovskite-like layer 94 has four layers of octahedrons 90.

As the understanding of what Smolenskii called a layered perovskite-like structure increased, the inventors have realized that these materials are more than a substance which spontaneously forms in layers. This is seen most easily by an example. Strontium bismuth tantalate (SrBi2Ta2O9) can be considered to

Pat. No. 5519234, *

be ...

... in the following definition: (B) a material having a localized structure, within a grain or other larger or smaller unit, which localized structure contains predominately repeatable units containing one or more perovskite-like layers and one or more intermediate non-perovskite-like layers spontaneously linked in an interdependent manner.

It has been discovered that the layered superlattice materials catalogued by Smolenskii et *al.* are all likely candidates for fatigue free switching ferroelectrics and dielectric materials that are resistant to ...

... x2 < + s2 > . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2 > . . . B1 y1 < + b1> Q z < - 2> ,

where A1, A2 . . . Aj represent A-site elements in the perovskite-like structure, which may be elements such as strontium, calcium, barium, bismuth, lead, and others S1, S2 . . . Sk represent superlattice generator elements, which usually is bismuth, but can also be materials such as yttrium, scandium, lanthanum, antimony, chromium, thallium, and other elements with a valence of + 3, B1, B2 . . . B1 represent B-site elements in the perovskite-like structure, which may be elements such as titanium, tantalum, hafnium, tungsten, niobium, zirconium, and other elements, and Q represents an anion, which generally is oxygen but may also be other elements, such as fluorine, ...

... [*2] s2 > . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2 > . . . B1 y1 < + b1> Q z < - 2> , where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . B1 represent B-site elements in a perovskite-like structure, Q represents an anion, the superscripts indicate the valences of the respective elements, the subscripts indicate the average number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero.

[*3] 3. A ...

FOCUS - 23 OF 107 PATENTS

5,504,041

<=2> GET 1st DRAWING SHEET OF 5

Apr. 2, 1996

Conductive exotic-nitride barrier layer for high-dielectric-constant materials

INVENTOR: Summerfelt, Scott R., Dallas, Texas

DETDESC:

...

TABLE

...

* * Conductive perovskite like materials

FOCUS - 24 OF 107 PATENTS

5,489,548

<=2> GET 1st DRAWING SHEET OF 3

Feb. 6, 1996

Method of forming high-dielectric-constant material electrodes comprising sidewall spacers

INVENTOR: Nishioka, Yasushiro, Tsukuba, Texas, Japan
Summerfelt, Scott R., Dallas, Texas

Park, Kyung-Ho, Tsukuba, Japan
Bhattacharya, Pijush, Midnapur, India

DETDESC:

...

TABLE

...

* * Conductive perovskite like

FOCUS - 25 OF 107 PATENTS

5,478,610

<=2> GET 1st DRAWING SHEET OF 5

Dec. 26, 1995

Metalorganic chemical vapor deposition of layered structure oxides

INVENTOR: Desu, Seshu B., Blacksburg, Virginia
Tao, W., Blacksburg, Virginia

SUM:

... 34, (1961), 695; G. A. Smolenski, V. A. Isupov and A. I. Agranovskaya, Fiz Tverdogo Tela, 3, (1961), 895). These compounds have pseudo-tetragonal symmetry and the structure is comprised of stacking of perovskite-like units between (Bi2O2)<2 + > layers along the pseudo-tetragonal c-axis. A large number of these compounds do not contain any volatile components in their sublattice that exhibits spontaneous polarization. The tendency for ...

FOCUS - 26 OF 107 PATENTS

5,468,679

<=2> GET 1st DRAWING SHEET OF 27

Nov. 21, 1995

Process for fabricating materials for ferroelectric, high dielectric constant, and integrated circuit applications

INVENTOR: Paz de Araujo, Carlos A., Colorado Springs, Colorado
Scott, Michael C., Colorado Springs, Colorado
Cuchiaro, Joseph D., Colorado Springs, Colorado
McMillan, Larry D., Colorado Springs, Colorado

SUM:

... 676 (1962) and Chapter 8 pages 241-292 and pages 624 & 625 of Appendix F of the Lines and Glass reference cited above.

As outlined in section 15.3 of the Smolenskii book, the layered perovskite-like materials can be classified under three general types:

(I) compounds having the formula A m-1 Bi2M m O 3m + 3 , where A = Bi<3 + > , Ba<2 + > , Sr< ...

... s2> . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2> . . . B1 y1 < + b1> Q z < - 2> ,

where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . Bl represent B-site elements in a perovskite-like structure, Q represents an anion, the superscripts indicate the valences of the respective elements, the subscripts indicate the average number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero. Preferably, the A- ...

DETDESC:

... compatible with, or can be designed to be compatible with, the other

materials commonly use[illegible] integrated circuits, such as [illegible]licon and gallium arsenide.

The class of materials are those disclosed by Smolenskii as having a layered perovskite-like structure, as discussed in the Background of the Invention. It has been realized that these materials are more than a substance which spontaneously forms in layers. This is seen most easily by an example. Strontium bismuth tantalate (SrBi2Ta2O9) can ...

... in the following definition: (B) a material having a localized structure, within a grain or other larger or smaller unit, which localized structure contains predominately repeatable units containing one or more perovskite-like layers and one or more intermediate non-perovskite-like layers spontaneously linked in an interdependent manner.

It is well-known that compounds having the perovskite structure may be described in terms of the general formula ABQ3, where A and B are cations and Q is an anion. In the ...

Pat. No. 5468679, *

FOCUS

... flexible than the lattice of a ferroelectric material. Turning to FIG. 13, a layered superlattice material 92 is illustrated. Smolenskii recognized that what we call the layered superlattice materials spontaneously form into layers 94 with a perovskite-like structure which alternate with layers 96 having a simpler structure. Depending on the material, the perovskite-like layers 94 may include one or a plurality of linked layers of perovskite-like octahedrons 90. As an example, FIG. 14 shows a unit cell of the material ABi2B2< + 5> O9, which is the formula for strontium bismuth tantalate (SrBi2Ta2O9) and other layered superlattice materials, such as tantalum, niobium, and tungsten, having a element with a valence of + 5 in the B-site. In this structure, each perovskite-like layer 94 includes two layers of octahedrons 90 which are separated by layers 96 of a material that does not have a perovskite-like structure. In this material the primitive unit cell consists of two perovskite layers 94 and two non-perovskite layers 96, since the structure shifts between the layers 98A and 98B. In FIG. ...

... O15, which is the formula for strontium bismuth titanate (SrBi4Ti4O15) and other layered superlattice materials having an element, such as titanium, hafnium, and zirconium, having a valence of + 4 in the B-sites. In this material each the perovskite-like layer 94 has four layers of octahedrons 90.

It has been discovered that the layered superlattice materials catalogued by Smolenskii et al. are all likely candidates for fatigue free switching ferroelectrics and dielectric materials that are resistant to ...

... x2 < + s2> . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2> . . . B1 y1 <b1> Q z < - 2> ,

where A1, A2 . . . Aj represent A-site elements in the perovskite-like structure, which may be elements such as strontium, calcium, barium, bismuth, lead, and others S1, S2 . . . Sk represent superlattice generator elements, which usually is bismuth, but can also be materials such as yttrium, scandium, lanthanum, antimony, chromium, thallium, and other elements with a valence of + 3, B1, B2 . . . B1 represent B-site elements in the perovskite-like structure, which may be elements such as titanium, tantalum, hafnium, tungsten, niobium, zirconium, and other elements, and Q represents an anion, which generally is oxygen but may also be other elements, such as fluorine, ...

FOCUS - 27 OF 107 PATENTS

5,447,908

<=2> GET 1st DRAWING SHEET OF 1

Sep. 5, 1995

Superconducting thin film and a method for preparing the

same

INVENTOR: Itozaki, Hideo, Hyogo, Japan
Tanaka, Saburo, Hyogo, Japan
Fujita, Nobuhiko, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

SUM:

... structure. The term of quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to Perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygendeficient perovskite or the like.

The superconducting thin film may be also another type of superconductor consisting mainly of a compound oxide represented by the formula:

THETA 4(PHI 1-q ,Ca q) m Cu ...

FOCUS - 28 OF 107 PATENTS

5,447,906

Sep. 5, 1995

Thin film high TC oxide superconductors and vapor deposition methods for making the same

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Gambino, Richard J., Yorktown Heights, New York
Koch, Roger H., Amawalk, New York
Lacey, James A., Mahopac, New York
Laibowitz, Robert B., Peekskill, New York
Viggiano, Joseph M., Wappingers Falls, New York

SUM:

... areas.

It is another object of the present invention to provide continuous, smooth copper oxide superconductive films exhibiting superconductivity at temperatures in excess of 40o K. and methods for making these films, where the films exhibit perovskite-like structure.

It is another object of this invention to provide transition metal oxide superconductive films including a rare earth element, or rare earth-like element, where the films exhibit superconductivity at temperatures greater than 40o ...

... earth-like element, B is an alkaline earth element, and y is sufficient to satisfy valence demands of the composition.

It is another object of the present invention to provide smooth, continuous copper oxide superconducting films having a perovskite-like crystal structure and exhibiting superconductivity at temperatures in excess of 40o K., and to provide methods for making these films.

SUMMARY OF THE INVENTION

The films of this invention are oxide superconductors exhibiting superconductivity at temperatures in excess of ...

... addition to being continuous, smooth, and of excellent compositional uniformity. The Cu oxide films are therefore considered to be unique examples of this class of films, as are the processes for making them.

Typically, the films are characterized by a perovskite-like crystalline structure, such as those described in more detail by C. Michel and B. Rayeau in Revue Dde.

Chimie Minerale, 21[redacted]. 407 (1984). These films are [redacted]med by a ...

FOCUS - 29 OF 107 PATENTS

5,439,878

<=2> GET 1st DRAWING SHEET OF 21

Aug. 8, 1995

Method for preparing copper oxide superconductor containing carbonate radicals

INVENTOR: Kinoshita, Kyoichi, Hoya, Japan
Yamada, Tomoaki, Higashimurayama, Japan

SUM:

... novel superconducting material.
Description of the Prior Art

Several types of copper oxide superconductors have been discovered since high-To superconductivity was detected in the La-Ba-Cu-O system. Superconductivity would arise from the layered perovskite-like structure having CuO6 octahedra, or CuO5 pyramids, or CuO2 square planes as a building unit. The layered perovskite-like structure and a sufficient carrier concentration of the material are essential factors for making the material superconducting as indicated by Osamura & Zhang (Japan. J.Appl.Phys.26, L2094-L2096, 1987). ...

FOCUS - 30 OF 107 PATENTS

5,439,876

<=2> GET 1st DRAWING SHEET OF 5

Aug. 8, 1995

Method of making artificial layered high T c superconductors

INVENTOR: Graf, Volker, Wollerau, Switzerland
Mueller, Carl A., Hedingen, Switzerland

DETDESC:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

One material particularly suited as a substrate in the epitaxial growth of high T c superconductor material is strontium titanate, SrTiO3, which forms crystals like perovskite (FIG. 1). Each titanium ion 1 is octahedrally surrounded by six oxygen ions 2, the bigger strontium ions 3 being disposed in the spaces in between. At room temperature, ...

FOCUS - 31 OF 107 PATENTS

5,426,092

<=2> GET 1st DRAWING SHEET OF 14

Jun. 20, 1995

Continuous or semi-continuous laser ablation method for depositing fluorinated superconducting thin film having basal plane alignment of the unit cells deposited on non-lattice-matched substrates

INVENTOR: Ovshinsky, Stanford R., Bloomfield Hills, Michigan
Young, Rosa, Troy, Michigan

SUM:

... growth of a crystalline superconducting material in a manner as if mimicking the orientation of a substrate having an identical lattice structure

without the presence of such a substrate lattice structure. Simply stated, an "epitaxial-like" perovskite superconducting material grown on a non-lattice-matched substrate would nonetheless be characterized by a lattice structure identical to the lattice structure which would be present if the material was grown on a perovskite substrate. Thus, " ...

FOCUS - 32 OF 107 PATENTS

5,424,282

<=2> GET 1st DRAWING SHEET OF 5

Jun. 13, 1995

Process for manufacturing a composite oxide superconducting wire

INVENTOR: Yamamoto, Susumu, Hyogo, Japan
Murai, Teruyuki, Hyogo, Japan
Kawabe, Nozomu, Hyogo, Japan
Awazu, Tomoyuki, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

DETDESC:

... term of "quasiperovskite type structure" means any oxide that can be considered to have such a crystal structure-that is similar to perovskite-type oxides and may include an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

In practice, the element ct is preferably selected from Ba, Sr and/or Ca and the element beta is preferably selected from Y, La and/or lanthanid such as Sc, Ce, Gd, Ho, Er, Tin, Y b, ...

FOCUS - 33 OF 107 PATENTS

5,423,285

<=2> GET 1st DRAWING SHEET OF 27

Jun. 13, 1995

Process for fabricating materials for ferroelectric, high dielectric constant, and integrated circuit applications

INVENTOR: Paz de Araujo, Carlos A., Colorado Springs, Colorado
Cuchiaro, Joseph D., Colorado Springs, Colorado
Scott, Michael C., Colorado Springs, Colorado
McMillan, Larry D., Colorado Springs, Colorado

SUM:

... 676 (1962) and Chapter 8 pages 241-292 and pages 624& 625 of Appendix F of the Lines and Glass reference cited above.

As outlined in section 15.3 of the Smolenskii book, the layered perovskite-like materials can be classified under three general types:

(I) compounds having the formula A m-1 Bi2M m O 3m + 3 , where A = Bi<3 + > , Ba<2 + > , Sr< ...

... s2> . . . Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2> . . . B1 y1 < + b1> Q z < - 2> , where A1, A2 . . . Aj represent A-site elements in a perovskite-like structure, S1, S2 . . . Sk represent superlattice generator elements, B1, B2 . . . B1 represent B-site elements in a perovskite-like structure, Q represents an anion, the superscripts indicate the valences of the respective elements, the subscripts indicate the average number of atoms of the element in the unit cell, and at least w1 and y1 are non-zero. Preferably, the A- ...

DETDESC:

... compatible with [redacted] can be designed to be compat[redacted] with, the other materials commonly used in integrated circuits, such as silicon and gallium arsenide.

The class of materials are those disclosed by Smolenskii as having a layered perovskite-like structure, as discussed in the Background of the Invention. It has been realized that these materials are more than a substance which spontaneously forms in layers. This is seen most easily by an example. Strontium bismuth tantalate (SrBi2Ta2O9) can ...

... in the following definition: (B) a material having a localized structure, within a grain or other larger or smaller unit, which localized structure contains predominately repeatable units containing one or more perovskite-like layers and one or more intermediate non-perovskite-like layers spontaneously linked in an interdependent manner.

It is well-known that compounds having the perovskite structure may be described in terms of the general formula ABQ3, where A and B are cations and Q is an anion. In the ...

... flexible than the lattice of a ferroelectric material. Turning to FIG. 13, a layered superlattice material 92 is illustrated. Smolenskii recognized

that what we call the layered superlattice materials spontaneously form into layers 94 with a perovskite-like structure which alternate with layers 96 having a simpler structure. Depending on the material, the perovskite-like layers 94 may include one or a plurality of linked layers of perovskite-like octahedrons 90. As an example, FIG. 14 shows a unit cell of the material ABi2B2< + 5> O9, which is the formula for strontium bismuth tantalate (SrBi2Ta2O9) and other layered superlattice materials, such as tantalum, niobium, and tungsten, having a element with a valence of + 5 in the B-site. In this structure, each perovskite-like layer 94 includes two layers of octahedrons 90 which are separated by layers 96 of a material that does not have a perovskite-like structure. In this material the primitive unit cell consists of two perovskite layers 94 and two non-perovskite layers 96, since the structure shifts between the layers 98A and 98B. in FIG. ...

... O15, which is the formula for strontium bismuth titanate (SrBi4Ti4O15) and other layered superlattice materials having an element, such as titanium, hafnium, and zirconium, having a valence of + 4 in the B-sites. In this material each the perovskite-like layer 94 has four layers of octahedrons 90.

It has been discovered that the layered superlattice materials catalogued by Smolenskii et al. are all likely candidates for fatigue free switching ferroelectrics and dielectric materials that are resistant to ...

... Sk xk < + sk> B1 y1 < + b1> B2 y2 < + b2> . . . B1 y1 < + b1> Q z < - 2> ,tm (1)

where A1, A2 . . . Aj represent A-site elements in the perovskite-like structure, which may be elements such as strontium, calcium, barium, bismuth, lead, and others S1, S2 . . . Sk represent superlattice generator elements, which usually is bismuth, but can also be materials such as yttrium, scandium, lanthanum, antimony, chromium, thallium, and other elements with a valence of + 3, B1, B2 . . . B1 represent B-site elements in the perovskite-like structure, which may be elements such as titanium, tantalum, hafnium, tungsten, niobium, zirconium, and other elements, and Q represents an anion, which generally is oxygen but may also be other elements, such as fluorine, ...

5,409,890

Apr. 25, 1995

Process for producing an elongated sintered article

C 20

INVENTOR: Yamamoto, Susumu, Hyogo, Japan
Kawabe, Nozomu, Hyogo, Japan
Awazu, Tomoyuki, Hyogo, Japan
Murai, Teruyuki, Hyogo, Japan

SUM:

... term quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

The sintering operation of the powder mixture is carried out at temperature which is higher than 600o C. but is not higher than the lowest melting point of any component in the material powder to be sintered. If the sintering temperature exceeds the ...

FOCUS - 35 OF 107 PATENTS

5,401,715

<=2> GET 1st DRAWING SHEET OF 1

Mar. 28, 1995

Semiconductor substrate having a superconducting thin film

INVENTOR: Itozaki, Hideo, Hyogo, Japan
Harada, Keizo, Hyogo, Japan
Fujimori, Naoji, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

DETDESC:

... term quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

An atomic ratio of the lanthanide element "Ln":Ba:Cu is preferably 1:2:3 as is defined by the formula but the atomic ratio is not restricted strictly to this ratio. In fact, the other compound oxides having ...

FOCUS - 36 OF 107 PATENTS

5,389,603

<=2> GET 1st DRAWING SHEET OF 5

Feb. 14, 1995

Oxide superconductors, and devices and systems comprising such a superconductor

INVENTOR: Batlogg, Bertram J., New Providence, New Jersey
Cava, Robert J., Bridgewater, New Jersey

DETDESC:

... microscopy indicate a basically orthorhombic crystal structure, but there are also indications that, at least for some of the inventive compounds, the structure may be weakly monoclinic. Both of these possibilities are intended to be included in the term "perovskite-like" or analogous terms. Diffraction studies have also revealed the presence of a variety of long period long range ordered superlattices (typically in the ab plane).

FIG. 2 shows the field (225 Oe)-cooled ...

We claim:

[*1] 1. An articl[illegible]mprising a superconductive el[illegible]nt comprising at least one superconductive material having a perovskite-like crystal structure and nominal formula (Pb2A2 Cu')BCu2O8 + delta with (A selected from the group consisting of Sr, Ba, Sr and Ba, Sr and Ca, and Sr, Ba and Ca; Cu' is selected from the group consisting of ...

... [*1] parallel to the ab- plane; and wherein the composition is selected such that the superconductive material has a transition temperature of at least about 30K.

[*2] 2. An article comprising a superconductive element comprising at least one superconductive material having a perovskite-like crystal structure and nominal formula (X2A2Cu') BCu2O8 + delta , where X is selected from the group consisting of Pb, Pb and Bi, Pb and Tl, and Pb, Bi and Tl, with X being at least 50 atomic % of ...

FOCUS - 37 OF 107 PATENTS

5,362,710

<=2> GET 1st DRAWING SHEET OF 2

Nov. 8, 1994

Process for preparing high Tc superconducting material

INVENTOR: Fujita, Nobuhiko, Hyogo, Japan
Kobayashi, Tadakazu, Hyogo, Japan
Itozaki, Hideo, Hyogo, Japan
Tanaka, Saburo, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

SUM:

... quasi-perovskite type oxide means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

The present invention also provides a process for producing the abovementioned superconducting material, characterized by sintering a mixture of the following powders:

an oxide, carbonate, nitrate or sulfate of one element "A" selected from ...

FOCUS - 38 OF 107 PATENTS

5,356,674

<=2> GET 1st DRAWING SHEET OF 2

Oct. 18, 1994

Process for applying ceramic coatings using a plasma jet carrying a free form non-metallic element

INVENTOR: Henne, Rudolf, Boeblingen, Federal Republic of Germany
Weber, Winfried, Leinfelden-Echterdingen, Federal Republic of Germany
Schiller, Guenter, Gerlingen, Federal Republic of Germany
Schnurnberger, Werner, Stuttgart, Federal Republic of Germany
Kabs, Michael, Hanau, Federal Republic of Germany

SUM:

... materials are oxidized materials, for example, spinels and perovskites on a nickel or cobalt or nickel-cobalt basis. It is, however, also conceivable to apply all possible kinds of spinels and perovskites in accordance with the inventive process. This also applies to spinel-like and perovskite-like compounds and to non oxidized compounds, for example, nitrides, halides, carbides, etc., with nitrogen or halogens or also non-metallic compounds,

methane or acetylene ti being carried along as non-me ic element by the ...
FOCUS - 39 OF 107 PATENTS

5,354,733

<=2> GET 1st DRAWING SHEET OF 21

Oct. 11, 1994

Copper oxide superconductor containing carbonate radicals

INVENTOR: Kinoshita, Kyoichi, Hoya, Japan
Yamada, Tomoaki, Higashimurayama, Japan

SUM:
... 2. Description of the Prior Art

Several types of copper oxide superconductors have been discovered since high-T c superconductivity was detected in the La-Ba-Cu-O system. Superconductivity would arise from the layered perovskite-like structure having CuO6 octahedra, or CuO5 pyramids, or CuO2 square planes as a building unit. The layered perovskite-like structure and a sufficient carrier concentration of the material are essential factors for making the material superconducting as indicated by Osamura & Zhang (Japan.J.Appl.Phys.26, L2094-L2096, 1987). ...
FOCUS - 40 OF 107 PATENTS

5,340,796

<=2> GET 1st DRAWING SHEET OF 5

Aug. 23, 1994

Oxide superconductor comprising Cu, Bi, Ca and Sr

INVENTOR: Cava, Robert J., Bridgewater, New Jersey
Sunshine, Steven A., Berkeley Heights, New Jersey

ABST:
Novel superconductive oxides are disclosed. The oxides ali have layered perovskite-like crystal structure and manifest superconductivity above about 77K. An exemplary material has composition Bi2.2Sr2Ca0.8Cu2O8. Other materials are described by the nominal formula X 2 + x M n - x Cu n - ...

SUM:
... high temperature superconductors has been reported since publication of the above seminal papers. Most of the work deals with YBa2Cu3O x (the so-called 1-2-3 compound) and related compounds.

In all of these compounds the superconducting phase is perovskite-like, typically having orthorhombic crystal structure, and the compounds that exhibit high (i.e., T c > 77K) temperature superconductivity generally contain one or more rare earth elements.

The discovery of high T c superconductivity in some ...

... likely to be stable high T c superconductors, with T c s likely to be above 100K.

The novel phases all have a crystal structure that is closely related to that of the above described 80K compound and thus are perovskite-like. They differ from each other essentially only in the number of crystal planes between the two Bi-O double planes that bound the unit cell in the c-direction, or by the size of the supercell. The composition of the ...

DETDESC:
... in added layers of M and Cu between the Bi-O double layers and are expected to result in one or more phases of stable high T c superconductive

material.

All of the inventive phases have layered perovskite-like crystal structure, and the existence of relatively weak bonding between at least some layers may be the cause of the observed relatively high ductility of the inventive materials. It will be appreciated that by "perovskite-like" we mean not only the prototypical, truly cubic structure, but very significantly distortions therefrom.

Material specification in accordance with the invention depends upon the nature of the intended use. For power transmission, or any other currentcarrying
...

PAGE

Pat. No. 5340796, *

FOCUS

What is claimed is:

[*1] 1. An article comprising material perovskite-like structure and of nominal composition X 2 + x M 4 - x Cu3O10 + 0.5 +/- delta , where [x = p/q < 0.4, and p and q are positive integers] 0 </= x < 0.4, X is Bi and Pb, ...

FOCUS - 41 OF 107 PATENTS

5,338,721

<=2> GET 1st DRAWING SHEET OF 5

Aug. 16, 1994

Process for manufacturing a superconducting composite

INVENTOR: Yamamoto, Susumu, Hyogo, Japan
Murai, Teruyuki, Hyogo, Japan
Kawabe, Nozomu, Hyogo, Japan
Awazu, Tomoyuki, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

DETDESC:

... quasi-perovskite type structure" means any oxide that can be considered to have such a crystal structure that is similar to perovskite-type oxides and may include an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

In practice, the element alpha is preferably selected from Ba, Sr and/or Ca and the element beta is preferably selected from Y, La and/or lanthanid such as Sc, Ce, Gd, Ho, Er, Tm, Yb, Lu and the ...

FOCUS - 42 OF 107 PATENTS

5,332,722

<=2> GET 1st DRAWING SHEET OF 3

Jul. 26, 1994

Nonvolatile memory element composed of combined superconductor ring and MOSFET

INVENTOR: Fujihira, Mitsuka, Yokohama, Japan

DETDESC:

... term quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

Another superconducting compound oxide which can be used by the present invention is represented by the general formula:

(M,Sr)2CuO 4- delta

in which M stands for Y or La and ...

FOCUS - 43 OF 107 PATENTS

5,328,892

Jul. 12, 1994

Oxide superconductor composition and a process for the production thereof

INVENTOR: Manako, Takashi, Tokyo, Japan
Shimakawa, Yuichi, Tokyo, Japan
Kubo, Yoshimi, Tokyo, Japan

SUM:

... following formulae:

TlSr 3 - x Y x Cu2O7(IA)

wherein 0.1 </= x </= 1, and

TlSr 4 - x Y x Cu3O9(IB)

wherein 0.1 </= x </= 2. Unit cells of the layered perovskite-like crystal structures of these compositions of the formulae (IA) and (IB) may be shown respectively as follows:

TlO/SrO/CuO2/Sr or Y/CuO2/SrO(IX)

TlO/SrO/CuO2/Sr or Y/ ...

FOCUS - 44 OF 107 PATENTS

5,296,458

<=2> GET 1st DRAWING SHEET OF 4

Mar. 22, 1994

Epitaxy of high T c superconducting films on (001) silicon surface

INVENTOR: Himpsel, Franz J., Mt. Kisco, New York

SUM:

... first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure. Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O system have been found to exhibit a superconducting transition temperature in excess of 77K.

R. B. ...

FOCUS - 45 OF 107 PATENTS

5,286,712

<=2> GET 1st DRAWING SHEET OF 2

Feb. 15, 1994

High TC superconducting film

INVENTOR: Fujita, Nobuhiko, Hyogo, Japan
Kobayashi, Tadakazu, Hyogo, Japan

Itozaki, Hideo, Hyogo, Japan
Tanaka, Saburo, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

SUM:
... quasi-perovskite type oxide means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

The present invention also provides a process for producing the abovementioned superconducting material, characterized by sintering a mixture of the following powders:

an oxide, carbonate, nitrate or sulfate of one element "A" selected from ...

FOCUS - 46 OF 107 PATENTS

5,283,465

<=2> GET 1st DRAWING SHEET OF 5

Feb. 1, 1994

Superconducting lead on integrated circuit

INVENTOR: Yamazaki, Shunpei, Tokyo, Japan

DETDESC:
... subjected to supplemental annealing at 500o-600o C. for 1-2 hours as illustrated in FIG. 1(B). The supplemental annealing allows the superconducting ceramic material to form a modulated perovskite-like structure and, as a result, a high critical temperature is realized. On the substrate, there are provided superconducting leads 10 and 10' for interconnection among devices and contacts formed in or on the semiconductor substrate and a ...

FOCUS - 47 OF 107 PATENTS

5,278,140

<=2> GET 1st DRAWING SHEET OF 5

Jan. 11, 1994

Method for forming grain boundary junction devices using high T c superconductors

INVENTOR: Chaudhari, Praveen, Briarcliff Manor, New York
Chi, Cheng-Chung J., Yorktown Heights, New York
Dimos, Duane B., Montclair, New Jersey
Mannhart, Jochen D., Metzingen, New York, Federal Republic of Germany
Tsuei, Chang C., Chappaqua, New York

SUM:
... first showed superconducting behavior in mixed copper-oxides, typically including rare earth and/or rare earth-like elements and alkaline earth elements, for example La, Ba, Sr, . . . , and having a perovskite-like structure. Materials including the so called "1-2-3" phase in the Y-Ba-Cu-O system have been found to exhibit a superconducting transition temperature in excess of 77K. R. B. ...

FOCUS - 48 OF 107 PATENTS

5,252,547

<=2> GET 1st DRAWING SHEET OF 1

Oct. 12, 1993

Method of fo[redacted]ng an inorganic protective laye[redacted]on an oxide superconducting film

INVENTOR: Itozaki, Hideo, Hyogo, Japan
Tanaka, Saburo, Hyogo, Japan
Fujita, Nobuhiko, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

SUM:

... term of quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to Perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

The superconducting thin film may be also another type of superconductor consisting mainly of a compound oxide represented by the formula:

THETA 4(PHI 1 - q ,Ca q) m Cu ...

FOCUS - 49 OF 107 PATENTS

5,249,525

<=2> GET 1st DRAWING SHEET OF 11

Oct. 5, 1993

Spark-discharge lithography plates containing image-support pigments

INVENTOR: Lewis, Thomas E., E. Hampstead, New Hampshire
Nowak, Michael T., Gardner, Massachusetts

DETDESC:

... A perspective view of the first layer, labeled "Layer 0", appears in FIG. 6E. As shown in these figures, the spinel structure contains a number of octahedral sites for metal ions. Like perovskite structures spinels may also be defective, an example being gamma-Fe2O3. A spinel structure may also be intergrown with other structures.

In spinel compounds useful as image-support pigments, the ...

FOCUS - 50 OF 107 PATENTS

5,244,874

Sep. 14, 1993

Process for producing an elongated superconductor

INVENTOR: Yamamoto, Susumu, Hyogo, Japan
Kawabe, Nozomu, Hyogo, Japan
Awazu, Tomoyuki, Hyogo, Japan

DETDESC:

... term quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

Another superconducting compound oxide which can be prepared by the present invention is represented by the general formula:

(M, Sr)2CuO 4 - delta

in which M stands for Y or La and ...

FOCUS - 51 OF 107 PATENTS

5,241,191

<=2> GET 1st DRAWING SHEET OF 1

Aug. 31, 1993

Cubic perovskite crystal structure, a process of preparing the crystal structure, and articles constructed from the crystal structure

INVENTOR: Agostinelli, John A., Rochester, New York
Chen, Samuel, Penfield, New York

DETDESC:
... 1, PA-2, PA-3, PA-4 and PA-5, cited above and here incorporated by reference, can be employed. Highly compatible substrates are materials that themselves exhibit a perovskite or perovskite-like crystal structure. Strontium titanate is an example of a perovskite crystal structure which is specifically preferred for use as a substrate. Lanthanum aluminate (LaA103), lanthanum gallium oxide (LaGa03) and potassium tantalate are ...

FOCUS - 52 OF 107 PATENTS

5,236,894

Aug. 17, 1993

Process for producing a superconducting thin film at relatively low temperature

INVENTOR: Tanaka, Saburo, Itami, Japan
Itozaki, Hideo, Itami, Japan
Higaki, Kenjiro, Itami, Japan
Yazu, Shuji, Itami, Japan
Jodai, Tetsuji, Itami, Japan

SUM:
... crystal structure. The term quasi-perovskite type means a structure which can be considered to be similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

Still another example of the above-mentioned compound oxide is compound oxides represented by the general formula:

THETA 4(PHI 1 - q , Ca q) m Cu n O p + ...

FOCUS - 53 OF 107 PATENTS

5,221,660

<=2> GET 1st DRAWING SHEET OF 1

Jun. 22, 1993

Semiconductor substrate having a superconducting thin film

INVENTOR: Itozaki, Hideo, Hyogo, Japan
Harada, Keizo, Hyogo, Japan
Fujimori, Naoji, Hyogo, Japan
Yazu, Shuji, Hyogo, Japan
Jodai, Tetsuji, Hyogo, Japan

DETDESC:
... term quasi-perovskite type means a structure which can be considered to have such a crystal structure that is similar to perovskite-type oxides and includes an orthorhombically distorted perovskite or a distorted oxygen-deficient perovskite or the like.

An atomic ratio of lanthanide element "Ln":Ba:Cu preferably 1:2:3 as is defined by the formula but the atomic ratio is not restricted strictly to this ratio. In fact, the other compound oxides having ...

FOCUS - 54 OF 107 PATENTS

5,212,148

<=2> GET 1st DRAWING SHEET OF 1

May 18, 1993

Method for manufacturing oxide superconducting films by laser evaporation

INVENTOR: Roas, Bernhard, Erlangen, Federal Republic of Germany
Endres, Gerhard, Forchheim, Federal Republic of Germany
Schultz, Ludwig, Bubenreuth, Federal Republic of Germany

SUM:

... yet exactly established. This initial product is then converted, by applying a heat and oxygen treatment, into the material with the desired superconducting phase.

The superconductive metal-oxide phases, to be obtained in this manner, can have perovskite-like crystal structures and, in the case of YBa2Cu3O 7 - x , whereby 0 < x < 0.5, have an orthorhomic structure (compare, for example, "Europhysics Letters", Vol. 3, No. 12, Jun. 15, 1987, pages ...

FOCUS - 55 OF 107 PATENTS

5,183,799

<=2> GET 1st DRAWING SHEET OF 16

Feb. 2, 1993

Superconducting materials including La-Sr-Nb-O, Y-Ba-Nb-O, La-Sr-Nb-Cu-O, and Y-Ba-Nb-Cu-O

INVENTOR: Ogushi, Tetsuya, Kagoshima, Japan
Hakuraku, Yoshinori, Kagoshima, Japan
Ogata, Hisanao, Ibraki, Japan

ABST:

... V, Nb, Ta, T, Zr or Hf; 0 < x < 1; 0 < z < 1; i = 1, 3/2 or 2; 0 < y </= 4; Gis F, Cl or N; delta is oxygen defect, and having a perovskite-like crystal structure, show superconductivity at a temperature higher than the liquid nitrogen temperature.

SUM:

BACKGROUND OF THE INVENTION

This invention relates to a superconducting material having a perovskite-like crystal structure and a superconducting part using the same, particularly to a superconducting material suitable for having a high superconducting transition temperature (Tc), and a process for producing the same.

Heretofore, ...

DETDESC:

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The superconducting materials of this invention have a perovskite-like crystal structure and represented by the formulae:

(L x A 1 - x) i MO 1)

(L x A 1 - x) i M 1 - z Cu z ...

... by laminating this superconducting material with other films of electrical insulating material. It is preferable to laminate a plurality of film-like layers alternately, respectively. Further, it is preferable to use as an insulating material a perovskite-like ceramic of the same series.

Further, in the above-mentioned formulae (1) and (2), a total of valence number (p) of L, A and M, or L, A, M and Cu, and the valence number y of ...

... OMITTED p SYMBOL OMITTED = SYMBOL OMITTED y SYMBOL OMITTED +/- 0.5
Pat. No. 5183799, *

FOCUS

Further, it is preferable to include M of the valence of two.

More in detail, the material represented by the formula (1) has a perovskite-like crystal structure and has as the L element at least one element selected from the group consisting of scandium (Sc), yitrium (Y), and lanthanide elements of atomic numbers 57 to 71 (La to Lu) belonging to the group ...

... Ta) belonging to the group Vb of the periodic table and titanium (Ti), zirconium (Zr) and hafnium (Hf) belonging to the group IVb of the periodic table, these element being able to include Cu.

The oxide superconducting material having the perovskite-like crystal structure of this invention has as a fundamental constitution an octahedron having the M element which is an atom belonging to the group Vb or IVb as its center and 6 oxygen atoms. Since this material has defect of oxygen, that is, one or ...

... a mutual action of strong attraction necessary for forming a hole pair or electron pair showing a superconducting phenomenon at a temperature of 150K or higher.

The oxide superconducting material of this invention has the perovskite-like crystal structure as shown in FIGS. 1 and 2. These drawings show unit lattices of the materials represented by the formulae:

(L x A 1 - x) i MO y(1)

and (...

... formula (4) with at least one element selected from those of the group IVb and Vb, the total amount of the elements of the group IVb and Vb can exceed the amount of Cu.

It is also possible to produce an oxide superconducting powder having a perovskite-like crystal structure containing M element mainly by mixing a powder of oxide material represented by (L x A 1 - x) i CuO y , wherein x is 0 < x < 1; ...

... Cu:M = 1:1, carrying out substitution reaction between Cu and M element in vacuum, and finally pulverizing the final reaction product.

It is further possible to produce an oxide superconducting powder having a perovskite-like crystal structure and containing M element mainly by depositing in vacuum a film of pure metal of M element selected from the elements of groups IVb and Vb on outer surface of oxide ceramic ...

... 1, 3/2 or 2; y is 0 < y </= 4, containing the M element mainly (M being

Attachment D

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5,134,042

<=2> GET 1st DRAWING SHEET OF 6

Jul. 28, 1992

Solid compositions for fuel cells, sensors and catalysts

INVENTOR: Madou, Marc J., Palo Alto, California
Otagawa, Takaaki, Fremont, California
Sher, Arden, Foster City, California

... [*12] selected from lanthanum, cerium, neodymium, praseodymium, or scandium, B is independently selected from strontium, calcium, barium or magnesium, Q is independently selected from nickel, cobalt, iron or manganese, and y is between about 0.0001 and 1, wherein the perovskite or perovskite-type structure has an average size and distribution of between about 50 and 200 Angstroms in diameter; and the composite layer of between about 25 and 1000 microns in thickness;

D1

said composite havin ltiple interfaces between:

...

LEVEL 1 - 2 OF 2 PATENTS

4,948,680

<=2> GET 1st DRAWING SHEET OF 26

Aug. 14, 1990

Solid compositions for fuel cell electrolytes

INVENTOR: Madou, Marc J., Palo Alto, California
Otagawa, Takaaki, Fremont, California
Sher, Arden, Foster City, California

... [*25] 1.5 and d is between 0.001 and less than or equal to 3,

wherein either the first electrode material (C) or second electrode material (A') comprises

A 1 - x B x QO 3

having a perovskite or perovskite-type structure as an electrode catalyst in combination with

A 1 - x B x Z

as a polycrystalline solid electrolyte wherein

A is independently selected from lanthanum, cerium, neodymium, praseodymium or scandium,

...

D2

Attachment E

Perovskites and High T_c Superconductors

by

Francis S. Galasso

United Technologies Research Laboratories
East Hartford, Connecticut
USA

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Private Bag 8
Camberwell, Victoria 3124
Australia

Portions of this material were published previously in "Structure, Properties and Preparation of Perovskite-Type Compounds" by Francis S. Galasso, copyright © 1968 by Pergamon Press, Oxford.

Library of Congress Cataloging-in-Publication Data

Galasso, Francis S.
Perovskites and high T_c superconductors / by Francis S. Galasso.
p. cm.
ISBN 2-88124-391-6
1. High temperature superconductors. 2. Perovskite. I. Title.
QC611.98.H54G35 1990
537.6'23--dc20 89-38877
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F. Galasso

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Chapter II

Structure of Perovskite-type Compounds

Most of the compounds with the general formula ABO_3 have the perovskite structure. The atomic arrangement in this structure was first found for the mineral perovskite, $CaTiO_3$. It was thought that the unit cell of $CaTiO_3$ could be represented by calcium ions at the corners of a cube with titanium ions at the body center and oxygen ions at the center of the faces (Fig. 2.1). This simple cubic structure has retained the name perovskite, even though $CaTiO_3$ was later determined to be orthorhombic by Megaw.[1] Through the years it has been found that very few perovskite-type oxides have the simple cubic structure at room temperature, but many assume this ideal structure at higher temperatures.

In the perovskite structure, the A cation is coordinated with twelve oxygen ions and the B cation with six. Thus, the A cation is normally found to be somewhat larger than the B cation. In order to have contact between the A, B, and O ions, $R_A + R_O$ should equal $\sqrt{2}(R_B + R_O)$, where R_A, R_B and R_O are the ionic radii. Goldschmidt[2] has shown that the cubic perovskite structure is stable only if a tolerance factor, t defined by $R_A + R_O = t\sqrt{2}(R_B + R_O)$, has an approximate range of $0.8 < t < 0.9$, and a somewhat larger range for distorted perovskite structures. It should be noted that conflicting reports in the literature make it difficult to assign the correct unit cell dimensions for these distorted perovskite structures.

The ternary perovskite-type oxides described in this chapter will be divided into $A^{1+}B^{5+}O_3$, $A^{2+}B^{4+}O_3$, $A^{3+}B^{3+}O_3$ types and oxygen- and cation-deficient phases. The oxygen- and cation-deficient phases will be regarded as those which contain considerable vacancies and not those phases which are only slightly non-stoichiometric. Many of these contain B ions of one element in two valence states and should

E 3

Attachment F

COPPER OXIDE SUPERCONDUCTORS

Charles P. Poole, Jr.
Timir Datta
Horacio A. Farach

with help from

M. M. Rigney
C. R. Sanders

Department of Physics and Astronomy
University of South Carolina
Columbia, South Carolina

WILEY
A Wiley-Interscience Publication
JOHN WILEY & SONS
New York • Chichester • Brisbane • Toronto • Singapore

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Library of Congress Cataloging in Publication Data:

Poole, Charles P.
Copper oxide superconductors / Charles P. Poole, Jr., Timir Datta,
and Horacio A. Farach: with help from M. M. Rigney and C. R. Sanders.
p. cm.

"A Wiley-Interscience publication."
Bibliography: p.
Includes index.

1. Copper oxide superconductors. I. Datta, Timir. II. Farach,
Horacio A. III. Title.

QC611.98.C64P66 1988
539.6'23-dc 19 88-18569 CIP
ISBN 0-471-62342-3

Printed in the United States of America

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tetragonal phase, and the metal-to-insulator transition occurs at the tetragonal-to-orthorhombic phase boundary $x \approx 0.35$ (Matt7, Slei1).

D. PEROVSKITE-TYPE SUPERCONDUCTING STRUCTURES

In their first report on high-temperature superconductors Bednorz and Müller referred to their samples as "metallic, oxygen deficient . . . perovskite like mixed valent copper compounds." Subsequent work has confirmed that the new superconductors do indeed have these characteristics. In this section we will comment on their perovskite-like aspects.

1. Atom Sizes

In the oxide superconductors Cu replaces the Ti^{4+} ions (0.68 Å) of perovskite, and in most cases retains the CuO_2 layering with two oxygens per copper in the layer. Other cationic replacements tend to be Bi, Ca, La, Sr, Tl, and Y for the larger Ba, forming "layers" containing only one oxygen or none per cation. We see from the following list of ionic radii

Cu^{2-}	0.72 Å	
Bi^{5-}	0.74 Å	
Y^{3-}	0.94 Å	
Tl^{3-}	0.95 Å	
Bi^{3-}	0.96 Å	
Ca^{2-}	0.99 Å	(VI-4)
Sr^{2-}	1.12 Å	
La^{3-}	1.14 Å	
Ba^{2-}	1.34 Å	
O^{2-}	1.32 Å	

that there are four size groups, with all other cations significantly smaller then the Ba of perovskite. The common feature of CuO_2 layers that are planar or close to planar establishes a fairly uniform lattice size in the a,b plane. The parameters of the compounds LaSrCuO ($a = b = 3.77$ Å), YBaCuO ($a = 3.83$ Å, $b = 3.89$ Å), BiSrCaCuO ($a = b = 3.82$ Å), and TlBaCaCuO ($a = b = 3.86$ Å) are all between the ideal fcc oxygen lattice value of 3.73 Å and the perovskite one of 4.01 Å.

Table VI-2 gives the ionic radii of the positively charged ions of various elements of the periodic table. These radii are useful for estimating changes in lattice constant when ionic substitutions are made in existing structures. They also provide some insight into which types of substitutions will be most favorable.

F3

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STRUCTURES

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ll be most favorable.

TABLE VI-2. Ionic Radii in Angstroms of Selected Elements for Various Positive Charge States[a]

Z	Element	+1	+2	+3	+4	+5	+6
			Alkali				
3	Li	0.68					
11	Na	0.97					
19	K	1.33					
37	Rb	1.47					
55	Cs	1.67					
			Alkaline earths				
4	Be	0.44	0.35				
12	Mg	0.82	0.66				
20	Ca	1.18	0.99				
38	Sr		1.12				
56	Ba	1.53	1.34				
			Group III				
5	B	0.35		0.23			
13	Al			0.51			
31	Ga	0.81		0.62			
49	In			0.81			
81	Tl	1.47		0.95			
			Group IV				
6	C				0.16		
14	Si	0.65			0.42		
32	Ge		0.73		0.53		
50	Sn		0.93		0.71		
82	Pb		1.20		0.84		
			Group V				
15	P			0.44		0.35	
33	As			0.58		0.46	
51	Sb	0.89		0.76		0.62	
83	Bi	0.98		0.96		0.74	
			Chalcogenides				
16	S				0.37		0.30
34	Se	0.66			0.50		0.42
52	Te	0.82			0.70		0.56
			First transition series (3d[n])				
21	Sc			0.81			
22	Ti	0.96	0.94	0.76	0.68		
23	V		0.88	0.74	0.63	0.59	
24	Cr	0.81	0.89	0.63			0.52
25	Mn		0.80	0.66	0.60		

F4

TABLE VI-2. (continued)

Z	Element	+1	+2	+3	+4	+5	+6
26	Fe		0.74	0.64			
27	Co		0.72	0.63			
28	Ni		0.69				
29	Cu	0.96	0.72				
30	Zn	0.88	0.74				
			Second transition series ($4d^n$)				
39	Y			0.94			
40	Zr	1.09			0.79		
41	Nb	1.00			0.74	0.69	
42	Mo	0.93			0.70		0.62
43	Tc						
44	Ru				0.67		
45	Rh			0.68			
46	Pd		0.80		0.65		
47	Ag	1.26	0.89				
48	Cd	1.14	0.97				
			Third transition series ($5d^n$)				
72	Hf				0.78		
73	Ta					0.68	
74	W				0.70		0.62
75	Re				0.72		
76	Os				0.88		0.69
77	Ir				0.68		
78	Pt		0.80		0.65		
79	Au	1.37		0.85			
80	Hg	1.27	1.10				
			Rare earths ($4f^n$)				
57	La	1.39		1.14			
58	Ce	1.27		1.07	0.94		
59	Pr			1.06	0.92		
60	Nd			1.04			
61	Pm			1.06			
62	Sm			1.00			
63	Eu			0.98			
64	Gd			0.62			
65	Tb			0.93	0.81		
66	Dy			0.92			
67	Ho			0.91			
68	Er			0.89			
69	Tm			0.87			
70	Yb			0.86			
71	Lu			0.85			

[a]Three anion radii are 1.32 for O^{2-}, 1.33 for F^-, and 1.84 for S^{2-} (*Handbook of Chemistry and Physics*).

F5

Attachment I

COPPER OXIDE SUPERCONDUCTORS

Charles P. Poole, Jr.
Timir Datta
Horacio A. Farach

with help from

M. M. Rigney
C. R. Sanders

Department of Physics and Astronomy
University of South Carolina
Columbia, South Carolina

WILEY

A Wiley-Interscience Publication
JOHN WILEY & SONS
New York • Chichester • Brisbane • Toronto • Singapore

Library of Congress Cataloging in Publication Data:

Poole, Charles P.
Copper oxide superconductors / Charles P. Poole, Jr., Timir Datta,
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1. Copper oxide superconductors. I. Datta, Timir. II. Farach,
Horacio A. III. Title.

QC611.98.C64P66 1988
539.6'23–dc 19 88-18569 CIP
ISBN 0-471-62342-3

Printed in the United States of America

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VI

CRYSTALLOGRAPHIC STRUCTURES

A. INTRODUCTION

To properly understand the mechanisms that bring about the superconducting state in particular materials it is necessary to know the structures of the compounds that exhibit this phenomenon. Single-crystal structure studies have been carried out to determine the dimensions of the unit cell, the locations of the atoms in this cell, electronic charge distributions, and the possible presence of atomic irregularities. Neutron powder diffraction has also provided much of the detailed structure information found in this chapter (e.g., Antso, Beech, Cappo, Coxzz, Davil, Dayzz, Greed, John4, Jorge, Jorg1, Paulz, Torar, Vakni, Yamag, Yanz2). More routine X-ray powder pattern measurements which can identify a known structure and provide the unit cell dimensions are useful for checking the quality of samples, as was explained in Section V-I.

The numerical values of quantities such as lattice parameters and bond lengths show some variation in the literature, and many of our quoted values will be typical ones. Much of the quantitative structural information is organized in the tables.

In the beginning of this chapter we will introduce the perovskite structure and indicate how it is related to the oxide superconductors. Then we will describe the 21 structure of LaSrCuO and the 123 structure of YBaCuO, we will show how each is generated from a perovskite prototype, and we will clarify its layering scheme. The chapter will end with descriptions of the structures of the newer high-transition-temperature bismuth and thallium compounds.

I3

B. PEROVSKITES

Much has been written about the oxide superconductor compounds being perovskite types, so we will begin with a description of the perovskite structure. This will permit us to develop some of the notation to be used in describing the structures of the superconductors themselves.

1. Cubic Form

Above 200°C barium titanate crystallizes in the perovskite structure, which is cubic, so the three lattice parameters are all equal (i.e., $a = b = c$). The unit cell contains one formula unit $BaTiO_3$ and the atoms are located in the following special positions (Wyck2, p. 390):

Ba	(1a)	$\frac{1}{2},\frac{1}{2},\frac{1}{2}$	
Ti	(1b)	0,0,0	(VI-1)
O	(3c)	$0,0,\frac{1}{2}$; $0,\frac{1}{2},0$; $\frac{1}{2},0,0$	

where we have employed the crystallographic notation (1a) for an a-type lattice site which contains one atom, (3c) for a c-type lattice site which contains three atoms, and so on. Each atomic position is given by three coordinates, such as $0,0,\frac{1}{2}$ for the oxygen located at $x = 0, y = 0, z = 0.5a$. This arrangement corresponds to placing a titanium atom on each apex, a barium atom in the body center, and an oxygen atom on the center of each edge of the cube, as illustrated on Fig. VI-1. We see from the figure that the barium atoms are 12-fold coordinated and the titaniums have sixfold (octahedral) coordination. The lattice constant or length of the unit cell is $a = 4.0118$ Å at 201°C. The crystallographic space group is $Pm3m$, O_h^1.

An alternate way to represent this structure, which is commonly used in solid-state texts and in crystallography monographs (e.g., Wyck2), is to locate the

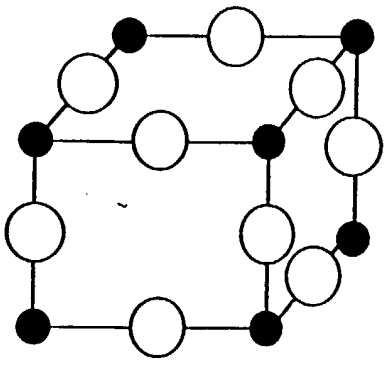

Fig. VI-1. Perovskite cubic unit cell showing titanium on the apices and oxygen in the edge-centered positions. Barium, which is in the body center, is not shown.

origin at the barium site; this places titanium in the center and the oxygens on the centers of the cube faces. The representation (Eq. VI-1) given above is more convenient for comparison with the structures of the oxide superconductors.

The compound $LaBaCu_2O_5$ was found to have a cubic perovskite subcell with the lattice parameter $a = 3.917$ Å (Sishe).

2. Tetragonal Form

At room temperature barium titanate is tetragonal with the unit cell dimensions $a = 3.9947$ Å and $c = 4.0336$ Å, which is close to cubic. For this lower symmetry the oxygens are assigned to two different sites, a single site along the side edges and a twofold one at the top and bottom. The atomic positions (Wyck2, p. 401)

$$\begin{array}{ll} \text{Ba} & \tfrac{1}{2},\tfrac{1}{2},0.488 \\ \text{Ti} & 0,0,0 \\ \text{O(1)} & 0,0,0.511 \\ \text{O(2)} & 0,\tfrac{1}{2},-0.026;\ \tfrac{1}{2},0,-0.026 \end{array} \qquad \text{(VI-2)}$$

are shown in Fig. VI-2. The distortions from the ideal structure of Fig. VI-1 are exaggerated on this sketch. We will see later that a similar distortion occurs in the YBaCuO structure. The cubic and tetragonal atom arrangements (VI-1) and (VI-2) are compared in Table VI-1, and we see from this table that the deviation from cubic symmetry is actually quite small.

3. Orthorhombic Form

When barium titanate is cooled below 5°C it undergoes a transition with a further lowering of the symmetry to the orthorhombic space group Amm2, C_{2v}, and

TABLE VI-1. Comparison of Atom Positions of $BaTiO_3$ in Its Cubic, Tetragonal and Orthorhombic Forms[a]

Group	Atom	Cubic and Tetragonal x	Cubic and Tetragonal y	Cubic z	Tetragonal z	Orthorhombic z
TiO_2	Ti	0	0	1	1	1
	O	0	$\frac{1}{2}$	1	0.974	1
	O	$\frac{1}{2}$	0	1	0.974	1
BaO	O	0	0	$\frac{1}{2}$	0.511	$\frac{1}{2}$
	Ba	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	0.488	$\frac{1}{2}$
TiO_2	Ti	0	0	0	0	0
	O	0	$\frac{1}{2}$	0	−0.026	0
	O	$\frac{1}{2}$	0	0	−0.026	0

[a] The x and y coordinates are the same for both positions. The orthorhombic form z coordinates are also given (Wyck2, pp. 390, 401, 405).

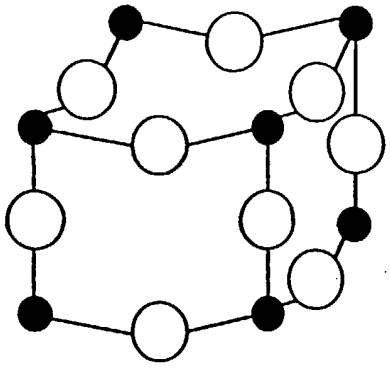

Fig. VI-2. Perovskite tetragonal unit cell showing the puckering of the Ti–O layers.

an enlargement of the unit cell to accommodate two formula units $(BaTiO_3)_2$. The enlarged cell is rotated by 45° relative to the higher-temperature ones, as shown on Fig. VI-3, and therefore its a and b lattice parameters are larger by the factor $\sqrt{2}$. The three lattice constants are $a = 5.669 = 4.009\sqrt{2}$ Å, $b = 5.682 = 4.018\sqrt{2}$ Å, and $c = 3.990$ Å. There are no longer any special sites, and the atomic positions are (Wyck2, p. 405):

Ba	(2a)	$0,\frac{1}{2},\frac{1}{2};\ \frac{1}{2},0,\frac{1}{2}$	
Ti	(2b)	$0,u+\frac{1}{2},0;\ \frac{1}{2},u,0$	with $u = 0.510$
O(1)	(2a)	$0,u+\frac{1}{2},\frac{1}{2};\ \frac{1}{2},u,\frac{1}{2}$	with $u = 0.490$
O(2)	(4e)	$u,v+\frac{1}{2},0;\ -u,v+\frac{1}{2},0;\ u+\frac{1}{2},v,0;\ -u+\frac{1}{2},v,0$	with $u = 0.253$, $v = 0.237$

(VI-3)

where $u = 0$ for Ba.

One should note that in Eq. (VI-3) Ba and O(1) are in the same (2a) type of site with different values of the parameter u. Figure VI-3 shows the coordinates of the atoms in the orthorhombic cell drawn using the approximation $\approx\frac{1}{2}$ for 0.490 and 0.510 and $\approx\frac{1}{4}$ for 0.253 and 0.237.

A comparison of Eqs. VI-1 to VI-3 indicates that the transformation from cubic to tetragonal involves only shifts in the z coordinates of atoms, while the orthorhombic phrase differs from the cubic one only through shifts in atom positions within x,y planes (see Table VI-1).

4. Atom Arrangements

The ionic radii of Ba^{2+} (1.34 Å) and O^{2-} (1.32 Å) are almost the same, and together they form a face-centered cubic (fcc) close-packed lattice with the smaller Ti^{4+} ions (0.68 Å) located in octahedral holes. The octahedral holes of a close-packed oxygen lattice have a radius of 0.545 Å, and if these holes were empty the lattice parameter would be $a = 3.73$, as shown on Fig. VI-4a. If each

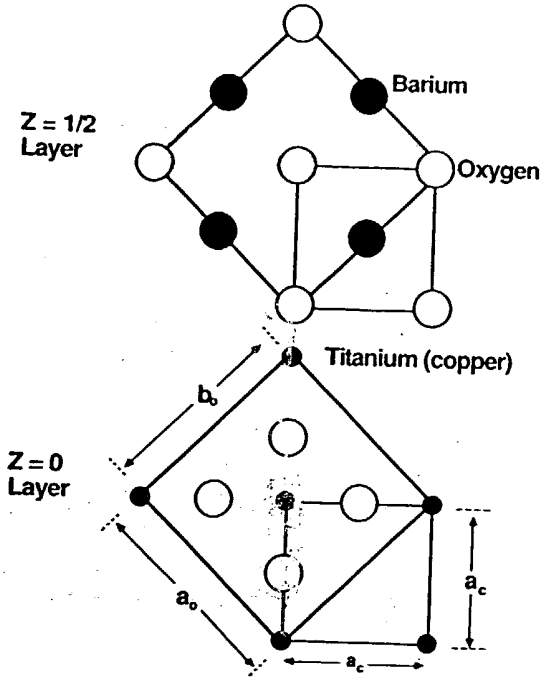

Fig. VI-3. Atom positions of perovskite when the monomolecular tetragonal unit cell is expanded to the bimolecular orthorhombic cell with new axes at 45° with respect to the old ones.

titanium were to move the surrounding oxygens apart to its ionic radius when occupying the hole, as shown on Fig. VI-4*b*, the lattice parameter a would be 4.00 Å. The observed cubic ($a = 4.012$ Å) and tetragonal ($a = 3.995$ Å, $c = 4.034$ Å) lattice parameters are close to these values, indicating a pushing apart of the oxygens. The tetragonal distortion illustrated on Fig. VI-2 and the orthorhombic distortion of Eq. (VI-3) constitute attempts to achieve this through an enlarged but distorted octahedral site. This same mechanism is operative in the oxide superconductors.

C. BARIUM-LEAD-BISMUTH OXIDE

In 1983 Mattheiss and Hamann referred to the 1975 "discovery by Sleight et al. of high temperature superconductivity" of the compound $BaPb_{1-x}Bi_xO_3$ in the composition range $0.05 \leq x \leq 0.3$ with T_c up to 13 K (Matt7, Sleig). Many consider this system, which disproportionates $2\ Bi^{4+} \rightarrow Bi^{3+} + Bi^{5+}$ in going from the metallic to the semiconducting state, as a predecessor to the LaSrCuO system.

TABLE VI-3. Atom Positions of Regular and Alternate La_2CuO_4 Structure, Both of Which Correspond to Space Group $I4/mmm$, D_{4h}^{17}[a]

		Regular Structure					Alternate Structure				
Complex	Ideal z	Atom	Site	x	y	z	Atom	Site	x	y	z
CuO_2	1	O(1)	4c	$\frac{1}{2}$	0	1	O(1)	4c	$\frac{1}{2}$	0	1
		O(1)	4c	0	$\frac{1}{2}$	1	O(1)	4c	0	$\frac{1}{2}$	1
		Cu	2a	0	0	1	Cu	2a	0	0	1
OLa	$\frac{5}{6} = 0.833$	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.862	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.862
		O(2)	4e	0	0	0.818					
							O(2)	4d	0	$\frac{1}{2}$	$\frac{3}{4}$
							O(2)	4d	$\frac{1}{2}$	0	$\frac{3}{4}$
LaO	$\frac{2}{3} = 0.667$	O(2)	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.682					
		La	4e	0	0	0.638	La	4e	0	0	0.638
O_2Cu	$\frac{1}{2}$	O(1)	4c	0	$\frac{1}{2}$	$\frac{1}{2}$	O(1)	4c	0	$\frac{1}{2}$	$\frac{1}{2}$
		O(1)	4c	$\frac{1}{2}$	0	$\frac{1}{2}$	O(1)	4c	$\frac{1}{2}$	0	$\frac{1}{2}$
		Cu	2a	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	Cu	2a	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
LaO	$\frac{1}{3} = 0.333$	La	4e	0	0	0.362	La	4e	0	0	0.362
		O(2)	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.318					
							O(2)	4d	$\frac{1}{2}$	0	$\frac{1}{4}$
							O(2)	4d	0	$\frac{1}{2}$	$\frac{1}{4}$
OLa	$\frac{1}{6} = 0.167$	O(2)	4e	0	0	0.182					
		La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.138	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.138
CuO_2	0	O(1)	4c	$\frac{1}{2}$	0	0	O(1)	4c	$\frac{1}{2}$	0	0
		O(1)	4c	0	$\frac{1}{2}$	0	O(1)	4c	0	$\frac{1}{2}$	0
		Cu	2a	0	0	0	Cu	2a	0	0	0

[a] Superconducting compounds crystallize in the regular structure (Oguch; see also Onoda). The ideal z values in column 2 are for the prototype perovskite.

constants for tetragonal LaSrCuO superconductors with various values of x, y, and δ in the formula $(La_{1-x}Sr_x)_{2-y}CuO_{4-\delta}$.

2. Alternate Tetragonal Form

In the previous section we discussed the tetragonal structure which is adopted by LaSrCuO superconductors. It has a variant (Hutir, Oguch) called the Nd_2CuO_4 structure in which the oxygens O(2) are in special sites (4d) instead of the general (4e) sites in the same space group, corresponding to

$$\text{O(2)} \quad \text{(4d)} \quad 0,\tfrac{1}{2},\tfrac{1}{4};\ \tfrac{1}{2},0,\tfrac{1}{4};\ \tfrac{1}{2},0,\tfrac{3}{4};\ 0,\tfrac{1}{2},\tfrac{3}{4} \qquad \text{(VI-7)}$$

The remaining atoms are in the positions given by Eq. (VI-6) and listed in Table VI-3, and the unit cell is sketched on the right-hand side of Fig. VI-5. This structure tends to be unstable relative to its K_2NiF_4 counterpart, and is not known to superconduct.

tetragonal phase, and the metal-to-insulator transition occurs at the tetragonal-to-orthorhombic phase boundary $x \approx 0.35$ (Matt7, Slei1).

D. PEROVSKITE-TYPE SUPERCONDUCTING STRUCTURES

In their first report on high-temperature superconductors Bednorz and Müller referred to their samples as "metallic, oxygen deficient . . . perovskite like mixed valent copper compounds." Subsequent work has confirmed that the new superconductors do indeed have these characteristics. In this section we will comment on their perovskite-like aspects.

1. Atom Sizes

In the oxide superconductors Cu replaces the Ti^{4+} ions (0.68 Å) of perovskite, and in most cases retains the CuO_2 layering with two oxygens per copper in the layer. Other cationic replacements tend to be Bi, Ca, La, Sr, Tl, and Y for the larger Ba, forming "layers" containing only one oxygen or none per cation. We see from the following list of ionic radii

Cu^{2+}	0.72 Å
Bi^{5+}	0.74 Å
Y^{3+}	0.94 Å
Tl^{3+}	0.95 Å
Bi^{3+}	0.96 Å
Ca^{2+}	0.99 Å
Sr^{2+}	1.12 Å
La^{3+}	1.14 Å
Ba^{2+}	1.34 Å
O^{2-}	1.32 Å

(VI-4)

that there are four size groups. with all other cations significantly smaller then the Ba of perovskite. The common feature of CuO_2 layers that are planar or close to planar establishes a fairly uniform lattice size in the a,b plane. The parameters of the compounds LaSrCuO ($a = b = 3.77$ Å), YBaCuO ($a = 3.83$ Å, $b = 3.89$ Å), BiSrCaCuO ($a = b = 3.82$ Å), and TlBaCaCuO ($a = b = 3.86$ Å) are all between the ideal fcc oxygen lattice value of 3.73 Å and the perovskite one of 4.01 Å.

Table VI-2 gives the ionic radii of the positively charged ions of various elements of the periodic table. These radii are useful for estimating changes in lattice constant when ionic substitutions are made in existing structures. They also provide some insight into which types of substitutions will be most favorable.

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TABLE VI-2. Ionic Radii in Angstroms of Selected Elements for Various Positive Charge States[a]

Z	Element	+1	+2	+3	+4	+5	+6
			Alkali				
3	Li	0.68					
11	Na	0.97					
19	K	1.33					
37	Rb	1.47					
55	Cs	1.67					
			Alkaline earths				
4	Be	0.44	0.35				
12	Mg	0.82	0.66				
20	Ca	1.18	0.99				
38	Sr		1.12				
56	Ba	1.53	1.34				
			Group III				
5	B	0.35		0.23			
13	Al			0.51			
31	Ga	0.81		0.62			
49	In			0.81			
81	Tl	1.47		0.95			
			Group IV				
6	C				0.16		
14	Si	0.65			0.42		
32	Ge		0.73		0.53		
50	Sn		0.93		0.71		
82	Pb		1.20		0.84		
			Group V				
15	P			0.44		0.35	
33	As			0.58		0.46	
51	Sb	0.89		0.76		0.62	
83	Bi	0.98		0.96		0.74	
			Chalcogenides				
16	S				0.37		0.30
34	Se	0.66			0.50		0.42
52	Te	0.82			0.70		0.56
			First transition series ($3d^n$)				
21	Sc			0.81			
22	Ti	0.96	0.94	0.76	0.68		
23	V		0.88	0.74	0.63	0.59	
24	Cr	0.81	0.89	0.63			0.52
25	Mn		0.80	0.66	0.60		

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TABLE VI-2. (continued)

Z	Element	+1	+2	+3	+4	+5	+6
26	Fe		0.74	0.64			
27	Co		0.72	0.63			
28	Ni		0.69				
29	Cu	0.96	0.72				
30	Zn	0.88	0.74				
		Second transition series ($4d^n$)					
39	Y			0.94			
40	Zr	1.09			0.79		
41	Nb	1.00			0.74	0.69	
42	Mo	0.93			0.70		0.62
43	Tc						
44	Ru				0.67		
45	Rh			0.68			
46	Pd		0.80		0.65		
47	Ag	1.26	0.89				
48	Cd	1.14	0.97				
		Third transition series ($5d^n$)					
72	Hf				0.78		
73	Ta					0.68	
74	W				0.70		0.62
75	Re				0.72		
76	Os				0.88		0.69
77	Ir				0.68		
78	Pt		0.80		0.65		
79	Au	1.37		0.85			
80	Hg	1.27	1.10				
		Rare earths ($4f^n$)					
57	La	1.39		1.14			
58	Ce	1.27		1.07	0.94		
59	Pr			1.06	0.92		
60	Nd			1.04			
61	Pm			1.06			
62	Sm			1.00			
63	Eu			0.98			
64	Gd			0.62			
65	Tb			0.93	0.81		
66	Dy			0.92			
67	Ho			0.91			
68	Er			0.89			
69	Tm			0.87			
70	Yb			0.86			
71	Lu			0.85			

[a]Three anion radii are 1.32 for O^{2-}, 1.33 for F^-, and 1.84 for S^{2-} (*Handbook of Chemistry and Physics*).

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2. Unit Cell Stacking

Three and four fundamental fcc unit cells stack vertically to form the superconducting unit cells of YBaCuO and LaSrCuO, respectively, with some oxygens removed in the process. This causes the vertical height or c parameter of the unit cell to be less than that expected for the stacking of perovskite cells:

$$\begin{aligned} &\text{YBaCuO:} \quad c \approx 11.7\ \text{Å},\ 3c_{\text{fcc}} = 11.19\ \text{Å},\ 3c_{\text{per}} = 12.03\ \text{Å} \\ &\text{LaSrCuO:} \quad c \approx 13.18\ \text{Å},\ 4c_{\text{fcc}} = 14.92\ \text{Å},\ 4c_{\text{per}} = 16.04\ \text{Å} \end{aligned} \qquad \text{(VI-5)}$$

Similar stackings occur in the BiSrCaCuO and TlBaCaCuO compounds.

E. LANTHANUM-COPPER OXIDE

The structure of LaSrCuO, $(La_{1-x}M_x)_2CuO_{4-\delta}$, called the 21 structure, where M is usually Sr or Ba, is tetragonal in some cases and orthorhombic in others. We will describe the tetragonal case first and then the orthorhombic distortion of it. The structures will be described in terms of the prototype compound La_2CuO_4 corresponding to $x = \delta = 0$ in the above expression, keeping in mind that in the superconducting compounds themselves some of the La atoms are replaced by a divalent cation such as Sr or Ba. Since lanthanum has a charge of +3 and oxygen is −2, it follows that all of the copper is divalent (+2) when $x = 0$, and some becomes trivalent for $x > 0$.

The compound La_2CuO_4 itself is considered to be nonsuperconducting, but some investigators claim that it or portions of it do exhibit superconductivity, perhaps of a filimentary type (Beill, Coop1, Dvora, Gran1, Pick1, Shahe, Skelt, Skel1, Skel2).

1. Tetragonal Form

The tetragonal LaSrCuO superconductors crystallize in what is called the K_2NiF_4 structure with space group $I4/mmm$, D_{4h}^{17} and two formula units per unit cell (e.g., Burns, Coll1, Hirot, Mossz, Onoda; Wyck3, p. 68). The copper atoms and one of the oxygen types O(1) are in special positions and the remaining atoms are all in general positions, with a single undetermined parameter associated with the z coordinate. The positions are

La	(4e)	$0,0,u;\ 0,0,-u;\ \frac{1}{2},\frac{1}{2},u+\frac{1}{2};\ \frac{1}{2},\frac{1}{2},-u+\frac{1}{2}$	(VI-6)
Cu	(2a)	$0,0,0;\ \frac{1}{2},\frac{1}{2},\frac{1}{2}$	
O(1)	(4c)	$0,\frac{1}{2},0;\ \frac{1}{2},0,0;\ \frac{1}{2},0,\frac{1}{2};\ 0,\frac{1}{2},\frac{1}{2}$	
O(2)	(4e)	$0,0,v;\ 0,0,-v;\ \frac{1}{2},\frac{1}{2},v+\frac{1}{2};\ \frac{1}{2},\frac{1}{2},-v+\frac{1}{2}$	

with $u = 0.362$ and $v = 0.182$. Typical lattice dimensions are $a = b = 3.77$ Å, $c = 13.18$ Å. Table VI-3 gives more details on the atom positions and Fig. VI-5*a* provides a sketch of this 21 structure. Table VI-4 lists the measured lattice

TABLE VI-3. Atom Positions of Regular and Alternate La_2CuO_4 Structure, Both of Which Correspond to Space Group $I4/mmm$, D_{4h}^{17}[a]

		Regular Structure					Alternate Structure				
Complex	Ideal z	Atom	Site	x	y	z	Atom	Site	x	y	z
CuO_2	1	O(1)	4c	$\frac{1}{2}$	0	1	O(1)	4c	$\frac{1}{2}$	0	1
		O(1)	4c	0	$\frac{1}{2}$	1	O(1)	4c	0	$\frac{1}{2}$	1
		Cu	2a	0	0	1	Cu	2a	0	0	1
OLa	$\frac{5}{6} = 0.833$	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.862	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.862
		O(2)	4e	0	0	0.818					
							O(2)	4d	0	$\frac{1}{2}$	$\frac{3}{4}$
							O(2)	4d	$\frac{1}{2}$	0	$\frac{3}{4}$
LaO	$\frac{2}{3} = 0.667$	O(2)	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.682					
		La	4e	0	0	0.638	La	4e	0	0	0.638
O_2Cu	$\frac{1}{2}$	O(1)	4c	0	$\frac{1}{2}$	$\frac{1}{2}$	O(1)	4c	0	$\frac{1}{2}$	$\frac{1}{2}$
		O(1)	4c	$\frac{1}{2}$	0	$\frac{1}{2}$	O(1)	4c	$\frac{1}{2}$	0	$\frac{1}{2}$
		Cu	2a	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	Cu	2a	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
LaO	$\frac{1}{3} = 0.333$	La	4e	0	0	0.362	La	4e	0	0	0.362
		O(2)	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.318					
							O(2)	4d	$\frac{1}{2}$	0	$\frac{1}{4}$
							O(2)	4d	0	$\frac{1}{2}$	$\frac{1}{4}$
OLa	$\frac{1}{6} = 0.167$	O(2)	4e	0	0	0.182					
		La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.138	La	4e	$\frac{1}{2}$	$\frac{1}{2}$	0.138
CuO_2	0	O(1)	4c	$\frac{1}{2}$	0	0	O(1)	4c	$\frac{1}{2}$	0	0
		O(1)	4c	0	$\frac{1}{2}$	0	O(1)	4c	0	$\frac{1}{2}$	0
		Cu	2a	0	0	0	Cu	2a	0	0	0

[a] Superconducting compounds crystallize in the regular structure (Oguch; see also Onoda). The ideal z values in column 2 are for the prototype perovskite.

constants for tetragonal LaSrCuO superconductors with various values of x, y, and δ in the formula $(La_{1-x}Sr_x)_{2-y}CuO_{4-\delta}$.

2. Alternate Tetragonal Form

In the previous section we discussed the tetragonal structure which is adopted by LaSrCuO superconductors. It has a variant (Hutir, Oguch) called the Nd_2CuO_4 structure in which the oxygens O(2) are in special sites (4d) instead of the general (4e) sites in the same space group, corresponding to

$$\text{O(2)} \quad \text{(4d)} \quad 0,\tfrac{1}{2},\tfrac{1}{4};\ \tfrac{1}{2},0,\tfrac{1}{4};\ \tfrac{1}{2},0,\tfrac{3}{4};\ 0,\tfrac{1}{2},\tfrac{3}{4} \qquad \text{(VI-7)}$$

The remaining atoms are in the positions given by Eq. (VI-6) and listed in Table VI-3, and the unit cell is sketched on the right-hand side of Fig. VI-5. This structure tends to be unstable relative to its K_2NiF_4 counterpart, and is not known to superconduct.

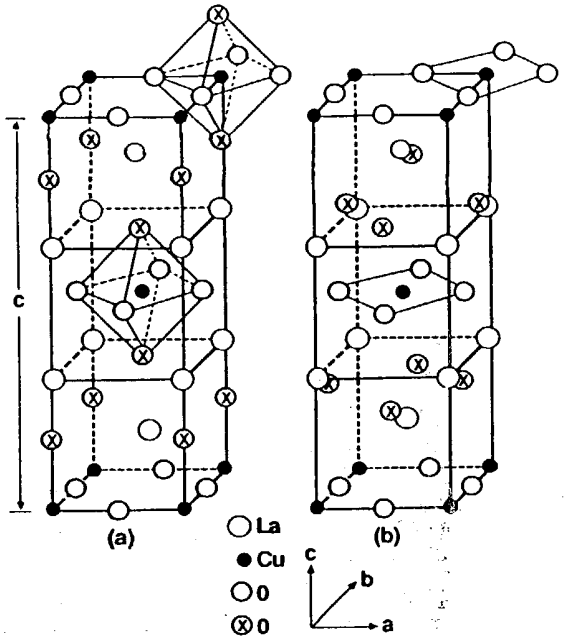

Fig. VI-5. Lanthanum copper oxide tetragonal unit cell. The regular cell (*a*) associated with the superconducting compounds is shown on the left and the alternative one (*b*) is on the right (Oguch; see also Ohba1). The oxygens denoted by ⊗ have different positions in the two cells.

3. Orthorhombic Form

The 21 orthorhombic LaSrCuO structure (Longo) is related to its tetragonal analogue given by Eq. (VI-6) in the same way that the orthorhombic perovskite structure (VI-3) is related to its tetragonal (VI-2) and cubic (VI-1) forms. This means that the orthorhombic basis directions are at 45° relative to the tetragonal ones, and the number of formula units in the cell is doubled. The situation is similar to that described by Fig. VI-3, with $a = 5.363$ Å $= 3.792\sqrt{2}$ Å, $b = 5.409$ Å $= 3.825\sqrt{2}$ Å, $c = 13.17$ Å. Writing the a and b lattice parameters times $\sqrt{2}$ compensates for the new choice of axes and shows that the orthorhombic values are close to the tetragonal $a = 3.81$ Å given earlier. There is also very little change in c. Table VI-5 lists the measured lattice constants for several orthorhombic compounds. The anisotropy factors ANIS

$$\text{ANIS} = \frac{100\,|b - a|}{0.5\,(b + a)} \qquad \text{(VI-8)}$$

listed in column 6 give the percentage deviation from tetragonality.

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TABLE VI-4. Selected Lattice Parameters for $(R_{1-x}M_x)_2CuO_{4-\delta}$ Type Superconductors with Tetragonal Structure[a]

R-M	x	Lattice Parameters[b] $a = b$ (Å)	c (Å)	Ref.
Y-Ba	0.4	3.828	12.68	Allge
La-Ba	0.05	3.782	13.168	Skelt
	0.075	3.7817	13.2487	Yuzzz
	0.075	3.787	13.31	Fujit
	0.1	3.791	13.35	Fujit
La-Sr	0.05	3.7839	13.211	Taral
	0.05	3.78	13.25	Hidak
	0.063	3.7784	13.216	Taral
	0.075	3.7793	13.2	Decro
	0.075	3.7771	13.226	Taral
	0.075	3.776	13.234	Shelt
	0.075	3.772	13.247	Brunz
	0.087	3.7739	13.232	Taral
	0.1	3.7739	13.23	Taral
	0.1	3.777	13.2309	Przys
	0.112	3.7708	13.242	Taral
	0.125	3.7685	13.247	Taral
	0.132	3.7666	13.255	Taral
	0.15	3.7657	13.259	Taral

[a] The table is sorted by cations and then by increasing x, the dopant parameter (prepared by M. M. Rigney).
[b] The a and b lattice parameters were converted from measured values of a_0, b_0 of Fig. VI-3 through the expression $a = a_0/\sqrt{2}$, $b = b_0/\sqrt{2}$.

Copper atoms and one of the oxygen types O(1) are in special positions; the remaining two atoms La and O(2) are in general positions with a single undetermined parameter associated with the z coordinate. The space group is *Fmmm*, D_{2h}^{23}, and the positions of the atoms are as follows:

La	(8i)	$0,0,u;\ 0,\frac{1}{2},\frac{1}{2}+u;\ \frac{1}{2},0,\frac{1}{2}+u;\ \frac{1}{2},\frac{1}{2},u;$ $0,0,-u;\ 0,\frac{1}{2},\frac{1}{2}-u;\ \frac{1}{2},0,\frac{1}{2}-u;\ \frac{1}{2},\frac{1}{2},-u$	
Cu	(4a)	$0,0,0;\ 0,\frac{1}{2},\frac{1}{2};\ \frac{1}{2},0,\frac{1}{2};\ \frac{1}{2},\frac{1}{2},0$	(VI-9)
O(1)	(8e)	$\frac{1}{4},\frac{1}{4},0;\ \frac{1}{4},\frac{3}{4},\frac{1}{2};\ \frac{3}{4},\frac{1}{4},\frac{1}{2};\ \frac{3}{4},\frac{3}{4},0$ $\frac{1}{4},\frac{1}{4},\frac{1}{2};\ \frac{1}{4},\frac{3}{4},0;\ \frac{3}{4},\frac{1}{4},0;\ \frac{3}{4},\frac{3}{4},\frac{1}{2}$	
O(2)	(8i)	$0,0,v$; . . . (same as La with v replacing u)	

where the parameters $u = 0.362$ and $v = 0.182$ have the same values as in the tetragonal case presented above. Since u and v are the same and the lattice constants are so close to the tetragonal values, the sketch of the tetragonal unit cell in Fig. VI-5*a* applies here also. Another work (Hirot, see also Onoda) assigned

TABLE VI-5. Selected Lattice Parameters for $(R_{1-x}M_x)_2CuO_{4-\delta}$ Type Superconductors with the Orthorhombic Structure[a]

R-M	x	Lattice Parameters a (Å)	b (Å)	c (Å)	ANIS	Ref.
La-Ba	0.02	3.786	3.811	13.17	0.66	Fujit
	0.075	3.786*	3.808*	13.257	0.58	Shelt
	0.075	3.798*	3.803*	13.234	0.13	Onoda
La-Ba	0.1	3.786*	3.824*	13.264	1.00	Hirot
La-Ca	0.075	3.772*	3.808*	13.168	0.95	Shelt

[a]ANIS is the anisotropy factor $100|b - a|/0.5(b + a)$ (prepared by M. M. Rigney).
[b]The a and b lattice parameters were converted from the measured values of a_0, b_0 of Fig. VI-3 through the expressions $a = a_0/\sqrt{2}$, $b = b_0/\sqrt{2}$.

$(La_{0.9}Ba_{0.1})_2O_4$ to the space group $Pccm$, D_{2h}^3 with $a = 5.354 = 3.786\sqrt{2}$ Å, $b = 5.408 = 3.824\sqrt{2}$ Å, and $c = 13.264$ Å.

4. Phase Transition

The compounds $(La_{1-x}M_x)_2CuO_4$ with M = Sr and Ba are orthorhombic at low temperatures and low M contents, and tetragonal otherwise, and superconductivity has been found on both sides of this transition (Baris, Bedn3, Birge, Dayzz, Dvora, Fujit, Greel, Kangz, Koyam, Mihal, Paulz; see also Heldz). The prototype compound La_2CuO_4 itself also exhibits the tetragonal-to-orthorhombic transition. The phase diagram of Fig. VI-6 shows the tetragonal, orthorhom-

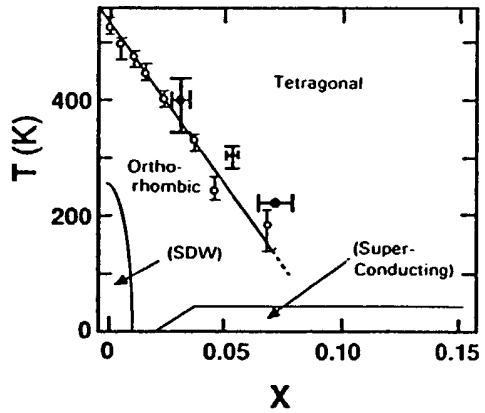

Fig. VI-6. Phase diagram showing data points along the tetragonal-to-orthorhombic transition line for $(La_{1-x}Ba_x)_2CuO_{4-5}$ (○, Fujit) and $(La_{1-x}Sr_x)_2CuO_4$ (•, Moret). The spin-density wave (SDW) and superconducting ● regions are indicated. These two compounds have about the same superconducting region.

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bic, superconducting, and spin-density wave (SDW) regions for the barium compound (Fujit), and data points for the strontium compound (Moret, More8). An alternate phase diagram has been proposed (Ahar1). Alkaline metal contents much larger than those shown on the figure (e.g., $x \approx 0.5$) can be non-superconducting. The SDW region occurs below the minimum concentration for the onset of superconductivity. Another work (Geise) showed that LaSr(0.04) undergoes a structural phase transition between 180 and 300 K.

5. Generation of LaSrCuO Structures

The LaSrCuO tetragonal structures may be visualized as being derived from four $LaCuO_3$ perovskite unit cells of the type illustrated in Fig. VI-1 stacked one above the other along the z or c axis. To generate La_2CuO_4 in the K_2NiF_4 structure the layers of CuO_2 atoms on the $z = \frac{1}{4}$ and $z = \frac{3}{4}$ levels of this four-cell stacking are removed, La and O are interchanged on two other layers, and the middle layer Cu atom is shifted from the edge to the center point $(\frac{1}{2},\frac{1}{2},\frac{1}{2})$ of the unit cell. Then the cell is compressed vertically from 14.9 to 13.2 Å (Table VI-4) to take up the space formerly occupied by the removed CuO_2 layers. Finally, the lanthanums along the c axis and the oxygens along the side edges are shifted vertically to accommodate the new atom arrangement.

To generate La_2CuO_4 with the Nd_2CuO_4 arrangement from this same four-cell stacking all of the oxygens on the vertical edges are removed, and two lanthanums are moved to edge sites. Copper is handled the same way as before, so in both cases the generated structure lacks two CuO_2 layers.

6. Layering Scheme of LaSrCuO

When we described the LaSrCuO structures we left out what is perhaps their most important characteristic, namely, their layered aspect. Lanthanum copper oxide may be looked upon as consisting of Cu-O layers of square-planar coordinated copper ions with lanthanum and O(2)-type oxygen ions populating the spaces between the layers. These Cu-O layers are stacked equally spaced, perpendicular to the c axis, as shown in Fig. VI-7, and their oxygens are aligned along the c axis, as indicated by the vertical dotted line on the left side of the figure. The copper ions, on the other hand, are not aligned vertically, but rather alternate between (000) and $(\frac{1}{2}\frac{1}{2}\frac{1}{2})$ sites in adjacent layers, as illustrated in Figs. VI-5 and VI-7.

The copper is actually octahedrally coordinated with oxygen, but the Cu-O distance of 1.9 Å in the CuO_2 planes is much less than the vertical distance of 2.4 Å between copper and the oxygens above and below, as shown in Fig. VI-8. When the structure is distorted orthorhombically the Cu-O spacings in both the planes and the c direction remain quite close to their tetragonal counterparts.

The copper ions and the O(1)-type oxygens in the planes are both in special sites in the tetragonal and orthorhombic forms, in accordance with Eqs. (VI-6) and (VI-9), and as a result the plane is perfectly flat in both cases. When the

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CLAIMS(OXYGEN LIKE)

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:LAIMS(CERAMIC LIKE)

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CLAIMS(CARBON LIKE)

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Attachment 6

:LAIMS(SILICON LIKE)

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CLAIMS(NITROGEN-LIKE)

Your search request has found 10 PATENTS through Level 1.
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CLAIMS(COPPER LIKE)

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Attachment M

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**********07346**********
PAGE 1
FOCUS - 1 OF 23 PATENTS

5,501,808

<=2> GET 1st DRAWING SHEET OF 5

Mar. 26, 1996

Crystalline-like transition metal material

INVENTOR: Patalano, Philip, 521 Lauiki St. #6, Honolulu, Hawaii 96826

DETDESC:

... polymers. The compounds of the present invention, like the linear transition metal acetylides, can obtain high molecular weights. However, the compounds of this invention are two-dimensional and three-dimensional in structure with many compounds being ceramic-like.

Compounds of the present invention can be produced by reacting anhydrous transition metal halide with alkali metal and/or alkaline earth metal acetylides (C2<2 - > = acetylide)in an inert atmosphere following ...

PAGE 2

FOCUS - 2 OF 23 PATENTS

5,490,977

Feb. 13, 1996

Removal of CO, hydrocarbons and NO x with catalyst containing platinum rhodium

INVENTOR: Wan, Chung-Zong, Somerset, New Jersey
Tauster, Samuel J., Englishtown, New Jersey
Rabinowitz, Harold N., Upper Montclair, New Jersey

SUM:

... continuous and open-ended gas flow passages extending therethrough. The catalytic material is dispersed as a coating on the carrier, specifically, on the walls of the gas flow passages thereof. Such carriers are normally made of a refractory, ceramic-like material such as cordierite, mullite, alumina, or any other suitable refractory material; they may also be made of a refractory metal such as stainless steel or other suitable corrosion-resistant, iron based alloys.

The ...

PAGE 3

FOCUS - 3 OF 23 PATENTS

5,434,125

<=2> GET 1st DRAWING SHEET OF 1

Jul. 18, 1995

Rare earth oxide superconducting material and process for producing the same

INVENTOR: Ogawa, Naoyuki, Anjo, Japan
Sakai, Takenobu, Susono, Japan
Hirabayashi, Izumi, Nagoya, Japan

DETDESC:

... material of rare earth oxide superconducting material. It is also possible to obtain a shaped material by spray- or powder-coating the above-mentioned mixed powder on a substrate made of a metal, a ceramic or the like to form a layer of rare earth oxide superconducting material on the substrate.

The temperature equal to or higher than the incongruent melting point of desired rare earth oxide superconducting material, used in the present invention ...

PAGE 4

FOCUS - 4 OF 23 PATENTS

5,395,821

<=2> GET 1st DRAWING SHEET OF 3

Mar. 7, 1995

Method of producing Pb-stabilized superconductor precursors and method of producing superconductor articles therefrom

INVENTOR: Kroeger, Donald M., Knoxville, Tennessee
Hsu, Huey S., Knoxville, Tennessee
Brynestad, Jorulf, Oak Ridge, Tennessee

SUM:

... transition temperature above 77o K. thereby allowing liquid nitrogen to be used as the cryogenic material.

The high temperature superconducting materials generally consist of metal oxides bonded together to form a ceramic-like structure. In one method of production, the metal oxides are mixed together as solids and heated at sintering temperatures of 700o C. to 1100o C. The sintered material is then reground and reheated. The material is pressed into pellets and ...

PAGE 5

FOCUS - 5 OF 23 PATENTS

5,378,345

<=2> GET 1st DRAWING SHEET OF 6

Jan. 3, 1995

Ceramic solid electrolyte-based electrochemical oxygen

concentrator cell

INVENTOR: Taylor, Dale M., Salt Lake City, Utah
Joshi, Ashok V., Salt Lake City, Utah

DETDESC:
... ingredients may be incorporated to enhance the structural properties of the electrolyte. For example, minor quantities of ZrO2, HfO2 and the like may be utilized as well as minor amounts of alumina, mullite and like ceramic oxides to enhance sintering or structural properties.

The ionic conductivity (mobility of the oxygen ion) of the ceria electrolytes of this invention is significantly better than zirconia or hafnia electrolytes, for example, or even certain ceria or bismuth oxide ...
PAGE 6

FOCUS - 6 OF 23 PATENTS

5,376,625

<=2> GET 1st DRAWING SHEET OF 1

Dec. 27, 1994

Method of making thin film superconductor assembly

INVENTOR: McCune, Robert C., Birmingham, Michigan

DETDESC:
... 20 can be formed of any suitable dielectric material which can achieve good structural integrity with substrate 15 and with superconductor 30 and coating 40. Preferred materials include various commercially available ceramic and ceramic-like materials well known to the skilled of the art. Exemplary such materials include beryllium oxide, diamond or diamond-like thin films, silicon carbide, strontium titanate, aluminum oxide and aluminum nitride. Other suitable ...
PAGE 7

FOCUS - 7 OF 23 PATENTS

5,348,797

<=2> GET 1st DRAWING SHEET OF 1

Sep. 20, 1994

Copper oxide coated substrates

INVENTOR: Clough, Thomas J., Santa Monica, California
Grosvenor, Victor L., Topanga, California
Pinsky, Naum, Thousand Oaks, California

SUM:
... about 150 microns, extrudates, flakes, single fibers, fiber rovings,

chopped fibers, fiber mats, porous substrates, irregularly shaped particles, e.g., catalyst supports, multi-channel monoliths, tubes, conduits and the like. Ceramic and metal fibers, especially continuous fibers, are particularly useful substrates when the copper oxide coated substrate is to be used as a superconductor.

The conditions at which each of the steps of the present process occur are effective to obtain the ...

FOCUS - 8 OF 23 PATENTS

5,338,722

Aug. 16, 1994

Method of forming superconducting oxide ceramic materials having high critical densities of superconducting current

INVENTOR: Takemura, Yasuhiko, Kanagawa, Japan

DETDESC:

... ceramic material in the crucible is maintained for 12 hours, and naturally cooled in order to complete the formation procedure.

In accordance with experiments, the superconducting ceramic material comprised oxide superconducting plate-like ceramic crystals of 10 microns grain diameter. The critical density of superconducting current was measured to be 11000 A/cm<2> .

The increase of the oxygen partial pressure can be carried out at once by ...

PAGE 9

FOCUS - 9 OF 23 PATENTS

5,292,716

Mar. 8, 1994

Oxide superconducting material and process for producing the same

INVENTOR: Sakai, Hitoshi, Komaki, Japan
Yoshida, Hitoshi, Okazaki, Japan
Baba, Hideyuki, Nagoya, Japan
Yoshida, Manabu, Aichi, Japan

DETDESC:

... material of rare earth oxide superconducting material. It is also possible to obtain a shaped material by spray- or powder-coating the above-mentioned mixed powder on a substrate made of a metal, a ceramic or the like to form a layer of rare earth oxide superconducting material on the substrate.

The temperature equal to or higher than the incongruent melting point of the desired REBa2Cu3O y , used in the present invention, varies depending upon the ...

PAGE 10

FOCUS - 10 OF 23 PATENTS

5,279,852

<=2> GET 1st DRAWING SHEET OF 1

Jan. 18, 1994

Process for coating a substrate with copper oxide and uses for coated substrates

INVENTOR: Clough, Thomas J., Santa Monica, California
Grosvenor, Victor L., Topanga, California
Pinsky, Naum, Thousand Oaks, California

SUM:

... about 150 microns, extrudates, flakes, single fibers, fiber rovings, chopped fibers, fiber mats, porous substrates, irregularly shaped particles, e.g., catalyst supports, multi-channel monoliths, tubes, conduits and the like. Ceramic and metal fibers, especially continuous fibers, are particularly useful substrates when the copper oxide coated substrate is to be used as a superconductor.

The conditions at which each of the steps of the present process occur are effective to obtain the ...

PAGE 11

FOCUS - 11 OF 23 PATENTS

5,272,132

<=2> GET 1st DRAWING SHEET OF 4

Dec. 21, 1993

Apparatus comprising a ceramic superconductive body and method for producing such a body

INVENTOR: Gyorgy, Ernst M., Madison, New Jersey
Johnson, Jr., David W., Pluckemin, New Jersey

SUM:

... used by these workers as being of the "Wayne State University type".

Among the techniques for producing the green bodies are extrusion, screen printing, tape casting, and slip casting. The inventive filamentary and sheet-like ceramic superconductive bodies can be advantageously used in a variety of apparatus including power transmission lines, rotating machinery such as electrical generators, magnets such as may be used in ...

DETDESC:
... referred to co-assigned U.S. patent application, the invention is not so limited. We believe that the techniques disclosed herein can, either directly or with obvious changes, be used in general in the manufacture of filamentary and/or sheet-like ceramic oxidic superconductive bodies having at least one relatively small dimension, generally in the approximate range 5 or 10 mu m to 1 mm.

Such bodies not only are of substantial technological significance but their ...

... properties. For most favorable results, the material is fired in an ambient environment with greater partial pressure of O2 than that of air (0.2 atm.).

A significant aspect of the invention is the formation of a filamentary or sheet-like ceramic superconductive body. In general, known techniques can be used to form the given body. These include extrusion, screen printing, tape casting, and slip casting.

The starting materials for each of these processes ...
PAGE 12

FOCUS - 12 OF 23 PATENTS

5,254,519

Oct. 19, 1993

Catalyst composition containing platinum and rhodium components

INVENTOR: Wan, Chung-Zong, Somerset, New Jersey
Tauster, Samuel J., Englishtown, New Jersey
Rabinowitz, Harold N., Upper Montclair, New Jersey

DETDESC:
... continuous and open-ended gas flow passages extending therethrough. The catalytic material is dispersed as a coating on the carrier, specifically, on the walls of the gas flow passages thereof. Such carriers are normally made of a refractory, ceramic-like material such as cordierite, mullite, alumina, or any other suitable refractory material; they may also be made of a refractory metal such as stainless steel or other suitable corrosion-resistant, iron based alloys.

The ... PAGE 13

FOCUS - 13 OF 23 PATENTS

5,183,799

<=2> GET 1st DRAWING SHEET OF 16

Feb. 2, 1993

Superconducting materials including La-Sr-Nb-O, Y-Ba-Nb-O, La-Sr-Nb-Cu-O, and Y-Ba-Nb-Cu-O

INVENTOR: Ogushi, Tetsuya, Kagoshima, Japan
Hakuraku, Yoshinori, Kagoshima, Japan
Ogata, Hisanao, Ibraki, Japan

DETDESC:
... laminating this superconducting material with other films of electrical insulating material. It is preferable to laminate a plurality of film-like layers alternately, respectively. Further, it is preferable to use as an insulating material a perovskite-like ceramic of the same series.

Further, in the above-mentioned formulae (1) and (2), a total of valence number (p) of L, A and M, or L, A, M and Cu, and the valence number y of oxygen has ...

FOCUS - 14 OF 23 PATENTS

5,145,833

Sep. 8, 1992

Method for producing ceramic bodies

INVENTOR: Prunier, Jr., Arthur R., Midland, Michigan
Spangenberg, Stanley F., Midland, Michigan
Wijeyesekera, Sunil, Midland, Michigan

SUM:
... as to retain its configuration and removed from the casting mold.

The pressure-transmitting medium includes a rigid interconnected skeletal structure which is collapsible when a predetermined force is applied. The skeletal structure may be of a ceramic-like material which is rigid and retains its configuration, but which may be broken up, crushed, fractionated or caused to flow at a predetermined relatively minimal force. The skeletal structure is defined by the ceramic material being ...

FOCUS - 15 OF 23 PATENTS

5,132,283

<=2> GET 1st DRAWING SHEET OF 1

Jul. 21, 1992

Thin film superconductor assembly and method of making the same

INVENTOR: McCune, Robert C., Birmingham, Michigan

DETDESC:
... 20 can be formed of any suitable dielectric material which can achieve good structural integrity with substrate 15 and with superconductor 30 and coating 40. Preferred materials include various commercially available ceramic and ceramic-like materials well known to the skilled of the art. Exemplary such materials include beryllium oxide, diamond or diamond-like thin films, silicon carbide, strontium titanate, aluminum oxide and aluminum nitride. Other suitable ...

FOCUS - 16 OF 23 PATENTS

5,057,483

Oct. 15, 1991

Catalyst composition containing segregated platinum and rhodium components

INVENTOR: Wan, Chung-Zong, Somerset, New Jersey

DETDESC:
... parallel, continuous and openended gas flow passages extending therethrough. The catalytic material is dispersed as a coating on the carrier, specifically, on the walls of the gas flow passages thereof. Such carriers are normally made of a refractory, ceramic-like material such as cordierite, mullite, alumina, or any other suitable refractory material; they may also be made of a refractory metal such as stainless steel or other suitable corrosion-resistant, iron based alloys.

The ...

FOCUS - 17 OF 23 PATENTS

5,049,452

Sep. 17, 1991

Target member used for formation of superconducting film

INVENTOR: Takeshita, Takuo, Saitama, Japan
Sugihara, Tadashi, Saitama, Japan

SUM:
... cm<2 > for 1 to 4 hours. The target is fabricated in this manner.

The target thus fabricated is mainly formed of a superconducting ceramic material in the R-A-Cu-0 system or of a substance like the ceramic in the R-A-Cu-0 system containing the copper oxide (which is hereinbelow represented by CuO) equal to or less than 20% by volume.

However, the composition of the target may be transferred to the composition of the thin film ...

PAGE 18

FOCUS - 18 OF 23 PATENTS

4,975,413

Dec. 4, 1990

Superconductor-coated carbon fiber composites

INVENTOR: Satek, Larry C., Wheaton, Illinois
Bennett, William F., Hartsdale, New York
Schulz, David A., Fairview Park, Ohio

SUM:

... lower superconducting-transition-temperature superconductors is large enough that many new uses for superconductors now can be devised and present uses enormously improved. However, because these new mixed-oxide superconductors are brittle, ceramic-like materials, they do not lend themselves easily to fabrication in the form of high strength, wire-type geometries, a requirement for many important uses to which superconductors have been put in the past. These uses largely ...

PAGE 19

FOCUS - 19 OF 23 PATENTS

4,949,702

<=2> GET 1st DRAWING SHEET OF 4

Aug. 21, 1990

Self-heating container

INVENTOR: Suzuki, Ryoichi, Yokohama, Japan
Maiya, Mitsuo, Tokyo, Japan
Kuwahara, Motoo, Kamaishi, Japan
Yamauchi, Kunio, Hikone, Japan
Kawabata, Choji, Tatebayashi, Japan
Takeuchi, Akira, Fukaya, Japan
Ando, Koki, Tokyo, Japan

DETDESC:

... DRAWINGS

In FIG. 1, the container includes a cylindrical can or metal casing 20 with its outer side surface surrounded by a heat-insulating cover 22 of paper, plastic, cloth, ceramic or the like. The cover 22 reduces the heat radiation from the can 20, and facilitates the handling of the container.

The can 20 contains a heater 24 near the bottom thereof, the heater including a cylindrical inverted cup-shaped ...

PAGE 20

FOCUS - 20 OF 23 PATENTS

4,927,857

<=2> GET 1st DRAWING SHEET OF 1

May 22, 1990

Method of methanol production

INVENTOR: McShea, III, William T., Martinsville, New Jersey
Yarrington, Robert M., Westfield, New Jersey

DETDESC:
... exhibits a low thermal coefficient of expansion, thermal shock resistance, and though not always, low thermal conductivity. Two general types of material of construction for such carriers are known. One is a ceramic-like porous material comprised of one or more metal oxides, for example; alumina, alumina-silica, alumina-silica-titania, mullite, cordierite, zirconia, zirconia-spinel, zirconia-mullite, silicon carbide, etc. ...

... extending therethrough. The sheets and corrugations are sized to provide the desired number of gas flow passages, which may range, typically, from about 200 to 1,200 per square inch of end face of the tubular roll.

Although the ceramic-like metal oxide materials such as cordierite or alumina-silica-titania are somewhat porous and rough-textured, they nonetheless have a relatively low surface area with respect to catalyst support requirements and, of course, a stainless ...

FOCUS - 21 OF 23 PATENTS

4,320,418

<=2> GET 1st DRAWING SHEET OF 9

Mar. 16, 1982

Large area display

INVENTOR: Pavliscak, Thomas J., 2 S 454 Seneca Dr., Wheaton, Illinois 60187

DETDESC:
... substrate surface inhibits the permanent adherence of some electrode materials to the surface. Therefore, the electrodes are preferably deposited on that glass substrate surface which is free from tin or tin oxide.

In another mode of this invention, the substrate is of a ceramic or ceramic-like material containing one or more oxides such as aluminum oxide, silicon oxide, titanium oxide, zirconium oxide, magnesium oxide, lead oxide, and so forth.

Since visible light generated by the monolithic ...
PAGE 22

FOCUS - 22 OF 23 PATENTS

4,233,623

<=2> GET 1st DRAWING SHEET OF 7

Nov. 11, 1980

Television display

INVENTOR: Pavliscak, Thomas J., 2 S. 454 Seneca Dr., Wheaton, Illinois 60187

DETDESC:
... substrate surface inhibits the permanent adherence of some electrode materials to the surface. Therefore, the electrodes are preferably deposited on that glass substrate surface which is free from tin or tin oxide.

In another mode of this invention, the substrate is of a ceramic or ceramic-like material containing one or more oxides such as aluminum oxide, silicon oxide, titanium oxide, zirconium oxide, magnesium oxide, lead oxide, and so forth.

Since visible light generated by the monolithic ...
PAGE 23

FOCUS - 23 OF 23 PATENTS

3,996,447

<=2> GET 1st DRAWING SHEET OF 2

Dec. 7, 1976

PTC resistance heater

INVENTOR: Bouffard, Michael L., Pawtucket, Rhode Island
Grant, John L., Mansfield, Massachusetts

ABST:
An electrical heater device includes a disc-like ceramic resistor element of a material of positive temperature coefficient of resistivity having contact surfaces formed on a broad opposite sides of the element. A pair of device terminals engage respective contact surfaces of the resistor ...
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ATTACHMENT A

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**********02438**********
PAGE 1
LEVEL 1 - 1 OF 225 PATENTS

5,828,093

<=2> GET 1st DRAWING SHEET OF 3

Oct. 27, 1998

Ceramic capacitor and semiconductor device in which the ceramic capacitor is mounted

INVENTOR: Naito, Yasuyuki, Kyoto, Japan
Sakabe, Yukio, Kyoto, Japan

... [*1] by a gap and surrounding said first capacitor electrode.

[*2] 2. A ceramic capacitor according to claim 1, wherein said ceramic dielectric substrate comprises a substrate for an SrTiO3 boundary layer type semiconductive capacitor.

[*3] 3. A ceramic capacitor according to claim 1, further comprising outer electrodes which are mainly made of at least one material selected from the group consisting of Au, Pt and Pd and formed on at ...

... [*12] layer is formed on said second principal face of said substrate.

[*13] 13. A ceramic capacitor according to claim 5, wherein said ceramic dielectric substrate comprises a substrate for an SrTiO3 boundary layer type semiconductive capacitor.

[*14] 14. A ceramic capacitor according to claim 5, wherein said first capacitor electrode formed on said first principal face of said ceramic substrate is divided into two parts.

[*15] 15. ...

... [*19] layers disposed respectively on said first and second capacitor electrodes.

[*20] 20. A ceramic capacitor according to claim 19, wherein said ceramic dielectric substrate comprises a substrate for an SrTiO3 boundary layer type semiconductive capacitor.

[*21] 21. A ceramic capacitor according to claim 20, further comprising outer electrodes which are mainly made of at least one material selected from the group consisting of Au, Pt and Pd and formed on at ...

... [*25] layer formed on said first principal face of said substrate.

[*26] 26. A ceramic capacitor according to claim 23, wherein said ceramic dielectric substrate comprises a substrate for an SrTiO3 boundary layer type semiconductive capacitor.

[*27] 27. A ceramic capacitor according to claim 23, wherein said first capacitor electrode formed on said first principal face of said ceramic

substrate is divided into two parts.
Pat. No. 5828093, *27

PAGE 2

[*28] 28. ...

PAGE 3

LEVEL 1 - 2 OF 225 PATENTS

5,793,767

<=2> GET 1st DRAWING SHEET OF 21

Aug. 11, 1998

ATM communication device and ATM communication network system with terminal devices having uniquely assigned virtual channel identifiers

INVENTOR: Soda, Keiichi, Kanagawa, Japan
Ichihashi, Tatsuki, Kanagawa, Japan
Ushisako, Yukio, Kanagawa, Japan
Kashima, Kazuyuki, Kanagawa, Japan
Yokotani, Tetsuya, Kanagawa, Japan
Hiramatsu, Koichi, Kanagawa, Japan
Shibahara, Makoto, Hyogo, Japan

... [*6] ATM cell transmission section of the first ATM terminal communication device to the other ATM terminal communication devices is stored into a segmentation and reassemble sublayer protocol data unit for an ATM adaptation layer type 3 or 4 in addition to the field of the virtual path identifier and the virtual channel identifier in the first ATM cell.

[*7] 7. The ATM communication network system of claim 6, wherein the segmentation and reassemble sublayer ...

... [*8] cell transmission section of the first ATM terminal communication device to the other ATM terminal communication devices is stored into a common part convergence sublayer protocol data unit for an ATM adaptation layer type 3 or 4 in addition to the field of the virtual path identifier and the virtual channel identifier in the first ATM cell.

[*9] 9. The ATM communication network system of claim 8, wherein the common part convergence ...

... [*10] space to be changed and transmitted from the ATM cell transmission section to the other ATM terminal communication devices is stored into a common part convergence sublayer protocol data unit for an ATM adaptation layer type 5 in addition to the field of the virtual path identifier and the virtual channel identifier in the first ATM cell.

[*11] 11. The ATM communication network system of claim 10, wherein the common part convergence sublayer ...

PAGE 4

LEVEL 1 - 3 OF 225 PATENTS

5,774,665

<=2> GET 1st DRAWING SHEET OF 6

Jun. 30, 1998

Asynchronous transfer mode LAN switching hub device using IEEE P1355 standard and its control method

INVENTOR: Jeong, Seong-Ho, Yusong-ku, Republic of Korea
Kim, Jang-Kyung, Yusong-ku, Republic of Korea
Chong, Il-Young, Seo-ku, Republic of Korea

... [*3] said ATM-to-P1355 module includes: a PHY layer having an ATM physical layer for directly connecting with the ATM network, an ATM layer for executing ATM protocol, an AAL (ATM Adaptation Layer) type layer for executing an ATM adaptable function, a LAN emulation layer for executing LAN emulation function, a bridging/relay layer for executing a bridging and relay function, an ...

LEVEL 1 - 4 OF 225 PATENTS

5,764,658

<=2> GET 1st DRAWING SHEET OF 36

Jun. 9, 1998

Data receiving apparatus and method

INVENTOR: Sekiguchi, Shun-ichi, Kanagawa, Japan
Murakami, Tokumichi, Kanagawa, Japan
Kato, Yoshiaki, Kanagawa, Japan

... [*1] bit stream of data blocks, each comprising a digital coded bit sequence, which are organized in a hierarchy including a plurality of layers, each layer having associated therewith one of a plurality of layer types, wherein at least one layer of a high-order layer type is composed of at least one layer of a lower-order layer type, each of the data blocks corresponding to one of the layers and including a start code which identifies the layer type of the data block, the apparatus comprising:

a layer memory for storing data indicating the layer type corresponding to the last start code received in the bit stream, the layer memory having a last layer type output,

a first expected start code selector coupled to receive the last layer type output from the layer memory, the first expected start code selector selecting and generating a first expected start code selector output identifying a set of expected start codes based on the last layer type received, wherein start codes of data blocks in the high-order layers are identified as expected start codes before start codes of data blocks in the lower-order layers;

start code ...

... [*1] detected start code, if one of the expected start codes is similar to data in the bit stream, the start code detector having a start code detector output which identifies the detected start code and its corresponding layer type;

means responsive to the start code detector output for updating the layer memory with data indicating the layer type corresponding to the detected start code; and

a block data decoder, responsive to the detected start code output from the start code detector, for decoding the data block corresponding to the detected start code.

[*2] 2. An ...

... [*12] bit stream of data blocks, each comprising a digital coded bit sequence, which are organized in a hierarchy including a plurality of layers, each layer having associated therewith one of a plurality of layer types, wherein at least one layer of a high-order layer type is composed of at least one layer of a lower-order layer type, each of the data blocks corresponding to one of the layers and including a start code which identifies the layer of the data block, the method comprising the steps of:

Pat. No. 5764658, *12 PAGE 6

storing data indicating the layer corresponding to the last start code ...

... [*12] a set of expected start codes based upon the data indicating the layer wherein said set of expected start codes lists start codes of data blocks in layers of said high-order layer type before start codes of data blocks in layers of said lower-order layer type;

continuously comparing data in the bit stream with the set of expected start codes;

selecting one of the expected start codes as a detected start code based on the comparison, if one of the expected start ...

LEVEL 1 - 5 OF 225 PATENTS PAGE 7

5,720,851

<=2> GET 1st DRAWING SHEET OF 2

Feb. 24, 1998

Method and arrangement for producing a foam-formed fibre or paper web

INVENTOR: Reiner, Lennart, Matfors, Sweden

... [*11] plurality of dispersion vessels.

[*12] 12. Arrangement according to claim 11, wherein the different fibre types are metered separately from the dispersion vessels up to an inlet box of the paper machine, said inlet box being of multi-layer type.

[*13] 13. Method according to claim 1, wherein the foam-formed fibre web includes a paper web.

[*14] 14. Method according to claim 1, wherein the foamed fibre dispersion is formed by dispersing natural ...

LEVEL 1 - 6 OF 225 PATENTS

5,715,250

<=2> GET 1st DRAWING SHEET OF 4

Feb. 3, 1998

ATM-lan connection apparatus of a small scale capable of connecting terminals of different protocol standards and ATM-lan including the ATM-lan connection apparatus

INVENTOR: Watanabe, Ayumi, Tokyo, Japan

... [*1] first ATM terminal for receiving as a first reception cell a first ATM cell supplied from said first ATM terminal;

a first AAL5-SAR (ATM Adaptation Layer type 5-Segmentation And Reassembly) section for reassembling said first reception cell into a first AAL5 packet to output said first AAL5 packet as a first LAN emulation frame;

...

... [*3] first ATM terminal for receiving as a first reception cell a first ATM cell supplied from said first ATM terminal;

a first AAL5-SAR (ATM Adaptation Layer type 5-Segmentation And Reassembly) section for reassembling said first reception cell into a first AAL5 packet to output said first AAL5 packet as a first LAN emulation frame;

...

LEVEL 1 - 7 OF 225 PATENTS

5,714,403

<=2> GET 1st DRAWING SHEET OF 3

Feb. 3, 1998

Process for producing a matrix of "all optical" vertically-structured quantum well components

INVENTOR: Nissim, Yves, Paris, France
Bensoussan, Marcel, Boulogne, France
Oudar, Jean-Louis, Chatenay Malabry, France
Rao, Elchuri, Issy Les Moulineaux, France

... [*2] in that the quantum well layer is a binary, ternary or quaternary GaAs or InP-based III-V semiconductor.

[*3] 3. A process according to claim 2, characterized in that the quantum well active layer is of the type GaAs/Ga[1-x]Al[x]As with 0 </= x </= 1, or GaAs/Ga[1-x]In[x]As with 0 < x < 1 or InP/In[x]Ga[1- ...

... [*3] In[x]Ga[1-x]As[y]P[1-y]with 0 </= x </= 1 and with 0 </= y </= 1.

[*4] 4. A process according to claim 1, characterized in that the positive layer is of type Si[x]N[y]or possibly SiO[x]N[y], with y, in the latter case, being small enough to enable the SiO[x]N[y]based layer to behave as a positive layer.

[*5] 5. A process according to claim 1, characterized in that the negative layer is of type Si[x]N[y]or possibly SiO[x]N[y], with y being small enough to enable the SiO[x]N[y]based layer to behave as a negative layer.

[*6] ...

LEVEL 1 - 8 OF 225 PATENTS

5,702,792

<=2> GET 1st DRAWING SHEET OF 8

Dec. 30, 1997

Optical recording medium

INVENTOR: Iida, Tetsuya, Tsurugashima, Japan
Jinno, Satoshi, Tsurugashima, Japan
Higuchi, Takanobu, Tsurugashima, Japan

What is claimed is:

[*1] 1. An optical recording medium of a multi-layer type comprising:

a substrate

a single or plural spacer layers each carrying pits and/or grooves;

a single or plural reflective layers layered on the spacer layers; and

wherein said reflective layer is made of a ...

... [*1] OH groups and a surface of said reflecting layer furthest from said substrate contacting with said spacer layer is provided with a silane coupling treatment.

[*2] 2. An optical recording medium of a multi-layer type comprising:

a substrate

a single or plural spacer layers each carrying pits and/or grooves;

a single or plural reflective layers layered on the spacer layers; and

wherein said reflective layer is made of one or ...

LEVEL 1 - 9 OF 225 PATENTS

5,693,085

<=2> GET 1st DRAWING SHEET OF 6

Dec. 2, 1997

Stent with collagen

INVENTOR: Buirge, Andrew W., Minnepaolis, Minnesota
Buscemi, Paul J., Long Lake, Minnesota
Burmeister, Paul H., Maple Grove, Minnesota

... [*21] combination of claim 20 wherein the collagen material includes Type I and Type IV layers.

[*22] 22. The combination of claim 21 wherein the Type IV is SIS.

[*23] 23. The combination of claim 22 wherein the Type IV is the innermost layer and the Type I layer includes a drug.

[*24] 24. The combination of claim 17 wherein the stent is of variable diameter.

[*25] 25. The combination of claim 24 wherein the stent is of the self-expanding type.

[*26] 26. The combination of claim 17 wherein the liner has ...

LEVEL 1 - 10 OF 225 PATENTS

5,668,353

<=2> GET 1st DRAWING SHEET OF 7

Sep. 16, 1997

Input panel avoiding interference pattern and method of forming the same

INVENTOR: Matsuda, Genichi, Kawasaki, Japan
Tanaka, Toshiaki, Kawasaki, Japan

What is claimed is:

[*1] 1. An input panel of a resistance layer type comprising:

a first board having a first transparent conductive layer on one surface;

a second board having a second transparent conductive layer on one surface, said first board and said ...

... [*3] as claimed in claim 1, wherein said second spacers are arranged at intervals from 0.5 mm to 20 mm, and said first spacers are arranged at smaller intervals.

[*4] 4. An input panel of a resistance layer type comprising:

a first board having a first transparent conductive layer on one surface;

a second board having a second transparent conductive layer on one surface, said first board and said ...

... [*4] first spacers have such a height smaller than that of said second spacers that an appropriate input sensitivity of said input panel can be achieved.

[*5] 5. A method of forming an input panel of a resistance layer type, said method comprising the steps of:

a) forming first spacers on a first transparent conductive layer formed on a first board, said first spacers being non-conductive and having a height ...

LEVEL 1 - 11 OF 225 PATENTS

5,665,502

<=2> GET 1st DRAWING SHEET OF 1

Sep. 9, 1997

Electrophotographic photoreceptor and method for producing the photoreceptor

INVENTOR: Ohashi, Kunio, Nara, Japan
Tokuyama, Mitsuru, Nara, Japan
Kinashi, Hiroshi, Kyoto, Japan
Nozomi, Mamoru, Kanagawa, Japan

Umehara, Tadashi, Niigata, Japan
Asari, Toshiya, Kanagawa, Japan

... [*8] a developing gap holding jig, and in a region in contact with a cleaner.

[*9] 9. An electrophotographic photoreceptor as claimed in claim 1, wherein said photoconductive layer is a laminated layer type photoconductive layer comprising at least a charge generating layer and a charge transfer layer, said charge generating layer having a thickness of from 0.1 to 2 mu m, and said charge transfer ...

LEVEL 1 - 12 OF 225 PATENTS

5,647,284

<=2> GET 1st DRAWING SHEET OF 6

Jul. 15, 1997

Method and apparatus for shipping knobbed glass cookware covers

INVENTOR: Frysinger, Eric T., Groveport, Ohio
Pirello, Joe, Reynoldsburg, Ohio

... [*3] layer of said type of goods may be placed, the partition further including a plurality of integrally-formed flaps, each flap assuming an upwardly-angled position when one of said projections from a layer of such type of goods stacked immediately underneath the partition projects upward through an opening in the partition formed by said flap,

(c) a substantially rigid top plate for covering a top layer of said type of goods, the plate having a size and shape approximately equal to that of said pallet and including a plurality of equally-spaced holes to accommodate said projections from said top layer of such type of goods when said goods are stacked on a partition there beneath, said top plate further including substantially square notches inwardly-formed into its corners to complimentarily engage vertical corner posts on said pallet so ...

LEVEL 1 - 13 OF 225 PATENTS

5,642,188

<=2> GET 1st DRAWING SHEET OF 2

Jun. 24, 1997

Wet-type electrophotographic image formation method

INVENTOR: Mochizuki, Manabu, Yokohama, Japan
Kurotori, Tsuneo, Tokyo, Japan
Ariyama, Kenzo, Yokohama, Japan
Kojima, Kenji, Tokyo, Japan

Tsuruoka, Ichiro, Tokyo, Japan
Echigo, Katsuhiro, Yokohama, Japan
Miyao, Mayumi, Tokyo, Japan

... [*1] said silicone oil, and said photoconductive member is an organic photoconductive member.

[*2] 2. The wet-type image formation apparatus as claimed in claim 1, wherein said organic photoconductor is of a single layer type in which a charge generating material and a charge transporting material are contained.

[*3] 3. The wet-type image formation apparatus as claimed in claim 1, wherein said photoconductive layer comprises (...

... [*9] said silicone oil, and said photoconductive member is an organic photoconductive member.

[*10] 10. The wet-type image formation apparatus as claimed in claim 9, wherein said organic photoconductor is of a single layer type in which a charge generating material and a charge transporting material are contained.

[*11] 11. The wet-type image formation apparatus as claimed in claim 9, wherein said photoconductive layer comprises (...

LEVEL 1 - 14 OF 225 PATENTS

5,636,097

<=2> GET 1st DRAWING SHEET OF 3

Jun. 3, 1997

Protective circuit for semiconductor power device

INVENTOR: Palara, Sergio, Catania, Italy
Sueri, Stefano, Catania, Italy

... [*1] second circuit means comprise a condenser in an N + /P junction located in an epitaxial region contained within an insulation well of the type P in turn contained in an epitaxial layer of the type N - grown on a substrate of the type N + , and an NPN transistor having as the collector an enriched region of the type n + of said epitaxial region, as the base said insulation well of the type P and as the ...

... [*7] second circuit means comprise a condenser in an N + /P junction located in an epitaxial region contained within an insulation well of the type P in turn contained in an epitaxial layer of the type N-grown on a substrate of the type N + , and an NPN transistor having as the collector an enriched region of the type n + of said epitaxial region, as the base said insulation well of the type P and as the ...

LEVEL 1 - 15 OF 225 PATENTS

5,623,181

<=2> GET 1st DRAWING SHEET OF 19

Apr. 22, 1997

Multi-layer type light emitting device

INVENTOR: Suehiro, Yoshinobu, Gyoda, Japan
Yamazaki, Shigeru, Gyoda, Japan
Sato, Takashi, Gyoda, Japan

What is claimed is:

[*1] 1. A multi-layer type light emitting device, comprising:

at least two light emitting sources, successively disposed along a light-transmitting path, including a rearmost source at a rear end of the path and a ...

... [*1] direction rays of light emitted by each source except the rearmost source, and for transmitting therethrough in the forward direction rays of light emitted by the rearmost source.

[*2] 2. A multi-layer type light emitting device according to claim 1, which further comprises a reflection surface disposed so as to correspond to said rearmost light emitting source, for reflecting rays of light emitted by said rearmost light emitting source and radiating the rays of light in the forward direction.

[*3] 3. A multi-layer type light emitting device according to claim 1, wherein said light emitting sources emit rays of light with different luminous wavelength ranges, respectively.

[*4] 4. A multi-layer type light emitting device according to claim 3, wherein said light emitting sources include ones emitting rays of red or nearly red light, green or nearly green light and blue or nearly blue light respectively.

[*5] 5. A multi-layer type light emitting device according to claim 1, wherein at least one of said light emitting sources emits ray of light with two or more luminous wavelength ranges.

[*6] 6. A multi-layer type light emitting device according to claim 1, wherein said at least two light emitting sources includes three light emitting sources, and wherein the respective optical surface for each light emitting source except the rearmost source each reflects rays of light emitted by said light emitting source with approximately the same luminous intensity distribution characteristics.

[*7] 7. A multi-layer type light emitting device according to claim 1, wherein said optical surface is a light semi-transmissible thin film reflection surface, or said optical surface is formed by a method wherein reflection

portions are partially formed on a light transmissible surface.

[*8] 8. A multi-layer type light emitting device according to claim 1, wherein said optical surface is a wavelength selective surface.

[*9] 9. A multi-layer type light emitting device according to claim 8, wherein said optical surface is a dichroic mirror formed by multi-layering of thin films having different refractive indexes.

[*10] 10. A multi-layer ...

... [*10] each of said optical surface and said reflection surface of each of said sources is a concave surface facing a luminous surface of said at least one LED chip.

[*11] 11. A multi-layer type light emitting device according to claim 10, wherein the respective optical surface and said LED chip of each source, except the rearmost source, and said reflection surface and said LED chip are each integrally formed of a first light transmissible material, thereby forming respective LEDs.

[*12] 12. A multi-layer type light emitting device according to claim 11, wherein each LED is disposed in such a manner that a front surface thereof is complementary to and closely connected with a rear surface of an LED of a source positioned forward thereof.

[*13] 13. A multi-layer type emitting device according to claim 11, further comprising a second light transmissible material having a refractive index approximately the same as that of the first light transmissible material filling a space ...

... [*15] surface or said reflection surface for the source having the LED chip, and

wherein said optical surface is formed on a front surface of the light transmissible material sealing the LED of the rearmost source.

[*16] 16. A multi-layer type light emitting device according to claim 11, wherein an incident surface is provided on the path rearward of each optical surface, in spaced relation thereto, further comprising a further light transmissible material filling ...

... [*16] optical surface, wherein rays of light emitted on the path rearward of the incident surface in the forward direction pass through the incident surface, the further light transmissible material and the optical surface.

[*17] 17. A multi-layer type light emitting device according to claim 1, wherein the at least two light emitting sources includes at least three light

emitting sources, successively disposed along the light-transmitting path, the at least three ...

... [*17] source, each optical surface transmitting therethrough in the forward direction rays of light emitted by each rear source that is disposed between the optical surface and the rear end.

Pat. No. 5623181, *17

[*18] 18. A multi-layer type light emitting device, comprising:

at least two light emitting sources, successively disposed along a light-transmitting path, including a rearmost source at a rear end of the path and a ...

... [*18] transmitting therethrough in the forward direction rays of light emitted by the rearmost source;

wherein each of the light emitting sources, except the rearmost source, is a semiconductor LED chip.

[*19] 19. A multi-layer type light emitting device according to claim 18, wherein the at least two light emitting sources includes at least three light emitting sources, successively disposed along the light-transmitting path, the at least three ...

... [*19] source, each optical surface transmitting therethrough in the forward direction rays of light emitted by each rear source that is disposed between the optical surface and the rear end.

[*20] 20. A multi-layer type light emitting device, comprising:

at least two light emitting sources, successively disposed along a light-transmitting path, including a rearmost source at a rear end of the path and a ...

... [*20] flat optical board formed of a light transmissible material, the light transmissible material having an annular optical surface surrounding a side surface of the at least one LED chip.

[*21] 21. A multi-layer type light emitting device according to claim 20, wherein the at least two light emitting sources includes at least three light emitting sources, successively disposed along the light-transmitting path, the at least three ...

LEVEL 1 - 16 OF 225 PATENTS

5,605,051

<=2> GET 1st DRAWING SHEET OF 83

Feb. 25, 1997

Automotive air conditioner having condenser and evaporator provided within air duct

INVENTOR: Iritani, Kunio, Anjo, Japan
Numazawa, Shigeo, Nagoya, Japan
Fujiwara, Kenichi, Kariya, Japan
Yamanaka, Yasushi, Nakashima-gun, Japan
Isaji, Akira, Nishio, Japan
Suzuki, Takahisa, Kariya, Japan
Sanada, Ryoichi, Kariya, Japan

... [*13] converting a variation of temperature of the refrigerant flowing from said condenser into a variation of pressure.

[*14] 14. An automotive air conditioner according to claim 13, wherein said condenser and said subcooler are formed as one layer type heat exchanger having a large number of tubes serving as refrigerant passageway, a large number of heat radiating fins layered alternately with the tubes, and a pair of headers disposed on the opposite ends of the tubes.

[*15] 15. An automotive air conditioner according to claim 14, wherein said layer type heat exchanger comprises a partition plates in said headers in order that refrigerant flow is turned back and a mounting pipe for mounting said temperature sensitive tube.

[*16] 16. An ...

LEVEL 1 - 17 OF 225 PATENTS

5,589,960

<=2> GET 1st DRAWING SHEET OF 4

Dec. 31, 1996

Liquid crystal display system

INVENTOR: Chiba, Masao, Saitama, Japan
Ishii, Mikio, Saitama, Japan

What is claimed is:

[*1] 1. A double-layer type super-twisted nematic liquid crystal display system comprising:

a dot-matrix type liquid crystal display device for displaying at least one of characters and graphic forms;

a compensating ...

... [*1] crystal display device and said compensating liquid crystal device are driven with said drive voltages which are adjusted according to the calculation of contrast made with the aid of said light detecting means.

[*2] 2. A double-layer type super twisted nematic liquid crystal display system according to claim 1, further comprising:

a voltage memory circuit for storing most recent values of said drive voltages while said system is an off state to provide initial drive voltage values for when said system is switched to an on state.

[*3] 3. A double-layer type super-twisted nematic liquid crystal display system comprising:

a dot-matrix type liquid crystal display device for displaying at least one of characters and graphic forms;

a compensating ...

... [*3] said light detecting means and said liquid crystal display has a luminance measuring region which is turned on and off for measurement of the contrast of said liquid crystal display device.

[*4] 4. A double layer type super-twisted nematic liquid crystal display system comprising:

a dot-matrix type liquid crystal display device for displaying at least one of characters and graphic forms;

a compensating ...

... [*4] liquid crystal display device has a luminance measuring region which is divided into two parts which are alternately turned on and off for measurement of the contrast of said liquid crystal display device.

[*5] 5. A double layer type super-twisted nematic liquid crystal display system comprising:

a dot-matrix type liquid crystal display device for displaying at least one of characters and graphic forms;

a compensating ...

LEVEL 1 - 18 OF 225 PATENTS

5,580,816

<=2> GET 1st DRAWING SHEET OF 5

Dec. 3, 1996

Local oxidation process for high field threshold applications

INVENTOR: Hemmenway, Donald F., Melbourne, Florida
Pearce, Lawrence G., Palm Bay, Florida

... [*1] another;

providing an implant of a dopant species in a defined field region adjacent two of the device regions, said implant of sufficient energy and concentration to impart nucleation sites within the device layer of the type known to result in stacking faults during oxide growth conditions;

providing a thickness of thermally grown silicon dioxide in the field regions by thermally processing the structure to remove nucleation ...
24

PAGE

LEVEL 1 - 19 OF 225 PATENTS

5,575,418

<=2> GET 1st DRAWING SHEET OF 12

Nov. 19, 1996

Corrugated paperboard package systems with gas-permeable plastic membranes for modified atmosphere packaging of fresh fruits and vegetables and cut flowers

INVENTOR: Wu, Chiu H., Vancouver, Canada
Oikarinen, Juhani I., Lahti, Finland
Matstoms, Bo, Orebro, Sweden
Powrie, William D., North Vancouver, Canada

... [*9] paperboard combination so that no natural pinholes are formed.

[*10] 10. A paperboard as claimed in claim 1 wherein the overall permeability of the paperboard combination is regulated in part by regulating the the composition of the polymer layer and the type of kraft paper.

[*11] 11. A paperboard as claimed in claim 1 wherein the polymer is selected from the group consisting of ethylene vinylacetate (EVA), ethylbutyl acetate (EBA), a crosslinked ionomer resin, cast ...

PAGE 25

LEVEL 1 - 20 OF 225 PATENTS

5,570,084

<=2> GET 1st DRAWING SHEET OF 7

Oct. 29, 1996

Method of loose source routing over disparate network types in a packet communication network

INVENTOR: Ritter, Michael W., Los Altos, California
Bettendorff, John, San Jose, California
Flammer, III, George H., Cupertino, California
Galloway, Brett D., Campbell, California

What is claimed is:

[*1] 1. A method for digital packet communication between nodes in disparate networks including path unaware network layer types and path aware network layer types, said method comprising:

a) receiving a typed encapsulating packet which encapsulates a path-addressed packet at a first network layer, said first network layer being path aware;

...

... [*1] path aware protocol if said second network layer is path aware.

[*2] 2. A method for digital packet communication between nodes in disparate networks including path unaware network layer types and path aware network layer types, said method comprising:

a) receiving an encapsulating packet which encapsulates a path-addressed packet at a first network layer of a first type;

b) if said first type is path unaware, ...

... [*6] type of the received packet; and

relaying the received packet to an appropriate network router.

[*7] 7. A method for digital packet communication between nodes in various networks including path aware network layer types, said method comprising:

a) designating a destination path element for a packet by means of a type-length-value element specific only to one station of a group of ...

LEVEL 1 - 21 OF 225 PATENTS

5,555,347

<=2> GET 1st DRAWING SHEET OF 24

Sep. 10, 1996

Method and apparatus for controlling a robot using a neural network

INVENTOR: Yoneda, Takao, Nagoya, Japan
Komura, Katsuhiro, Takahama, Japan

... [*2] accordance with the second joint angle vector calculated by said second calculation means.

[*3] 3. An apparatus for controlling an articulated robot according to claim 2, wherein said neural network is of a three layer type which is composed of an input layer, an intermediate layer and an output layer.

[*4] 4. An apparatus for controlling an articulated robot according to claim 2, further comprising:

actual position measurement means for measuring the actual ...

GE 27 PA

LEVEL 1 - 22 OF 225 PATENTS

5,545,945

<=2> GET 1st DRAWING SHEET OF 1

Aug. 13, 1996

Thermionic cathode

INVENTOR: Branovich, Louis E., Howell, New Jersey
Eckart, Donald W., Wall, New Jersey
Fischer, Paul, Oakhurst, New Jersey

... [*2] emissions.

[*3] 3. A thermionic cathode as recited in claim 2 wherein the cathode is an impregnant-type cathode.

[*4] 4. A thermionic cathode as recited in claim 2 wherein the cathode is a layer-type cathode.

[*5] 5. An enhanced electron emission thermionic cathode, comprising:

a base material having a composition including Barium and Tungsten; and

an overcoating of emissive material forming an emissive surface on said base material;

...

PAGE 28

LEVEL 1 - 23 OF 225 PATENTS

5,525,541

<=2> GET 1st DRAWING SHEET OF 6

Jun. 11, 1996

Method of making an electronic and/or photonic component

INVENTOR: Krauz, Philippe, Creteil, France
Rao, Elchuri K., Issy-Les-Moulineaux, France

... [*1] region of the quantum well layer on which the dielectric layer is deposited to confer on said region electro-optical or photonic properties that correspond to said function.

[*2] 2. A method according to claim 1, wherein the quantum well layer is of the type based on GaAs and on InP.

[*3] 3. A method according to claim 2, wherein the quantum well layer is of one of the following types: GaAs/GaAlAs; InGaAs/Ga(Al)As; InGaAs/InAlAs; InGaAs/InP; and ...

LEVEL 1 - 24 OF 225 PATENTS

5,504,558

<=2> GET 1st DRAWING SHEET OF 1

Apr. 2, 1996

Electrophotographic photosensitive member, and electrophotographic apparatus and device unit employing the same

INVENTOR: Ikezue, Tatsuya, Yokohama, Japan

... [*11] photosensitive member according to claim 10, wherein the charge-transporting layer has a thickness of from 15 to 30 mu m.

[*12] 12. An electrophotographic photosensitive member according to claim 1, wherein the photosensitive layer is of a single layer type.

[*13] 13. An electrophotographic photosensitive member according to claim 12, wherein the photosensitive layer has a thickness of from 10 to 35 mu m.

[*14] 14. An electrophotographic photosensitive member according to claim 13, wherein the photosensitive layer has a ...

LEVEL 1 - 25 OF 225 PATENTS

5,489,372

Feb. 6, 1996

Process for producing light absorption layer of solar cell

INVENTOR: Hirano, Tomio, Susono, Japan

... [*7] indium plating bath with a dispersion of fine particles of selenium suspended therein to form a multi-layer electrodeposited layer including copper, indium, and selenium on said conductive substrate; and

heat-treating the multi-layer type electrodeposition layer to convert it into a ternary alloy layer of copper-indium-selenium.

[*8] 8. The process according to claim 7, wherein said copper plating bath is a sulfuric acid type electrodeposition bath which ...

LEVEL 1 - 26 OF 225 PATENTS

5,475,700

<=2> GET 1st DRAWING SHEET OF 5

Dec. 12, 1995

Laser diode with electron and hole confinement and barrier layers

INVENTOR: Iwata, Hiroshi, Tokyo, Japan

... [*11] indices of said hole confinement layer and said electron confinement layer.

[*12] 12. A laser diode as claimed in claim 11, wherein said hole confinement layer and said electron confinement layer are type II compound layers.

[*13] 13. A laser diode as claimed in claim 11, wherein said hole confinement layer and said electron confinement layer are type II superlattice layers.

[*14] 14. A laser diode as claimed in claim 11, wherein said hole potential in said hole confinement layer increases with distance away from said interface with ...

LEVEL 1 - 27 OF 225 PATENTS

5,466,892

<=2> GET 1st DRAWING SHEET OF 3

Nov. 14, 1995

Circuit boards including capacitive coupling for signal transmission and methods of use and manufacture

INVENTOR: Howard, James R., Santa Clara, California
Lucas, Gregory L., Newark, California

... [*3] between sets of the additional signal and receptor pads on the first and second conductive layers also for electrostatic transmission of AC signals therebetween.

[*4] 4. The circuit board of claim 1 wherein the circuit board is of a multi-layer type having at least a third conductive layer and further wherein the additional conductive circuit means on the adjacent pairs of the first, second and third conductive layers form additional signal and receptor pads separated by additional ...

... [*9] coupling between sets of the additional signal and receptor pads on the first and second conductive layers also for electrostatic transmission of AC signals therebetween.

[*10] 10. The method of claim 7 wherein the circuit board is of a multi-layer type having at least a third conductive layer and further wherein the additional conductive circuit means on the adjacent pairs of the first, second and third conductive layers form additional signal and receptor pads separated by additional ...

... [*13] in the AC signal transmitting circuit whereby capacitive reactance and inductive reactance approach equality in order to optimize capacitive coupling.

[*14] 14. The circuit board of claim 13 wherein the circuit board is of a multi-layer type having at least a third conductive layer and further wherein the additional conductive circuit means on the adjacent pairs of the first, second and third conductive layers form additional signal and receptor means separated by additional ...

LEVEL 1 - 28 OF 225 PATENTS

5,466,609

<=2> GET 1st DRAWING SHEET OF 5

Nov. 14, 1995

Biodegradable gelatin-aminodextran particle coatings of and processes for making same

INVENTOR: Siiman, Olavi, Davie, Florida
Burshteyn, Alexander, Hialeah, Florida
Gupta, Ravinder K., Pembroke Pines, Florida

CORE TERMS: gelatin, magnetic, particle, antibody, aminodextran, cell, bead, sample, ferrite, coating, minute, suspension, depletion, coated, tube, biological, rbc, crosslinked, sulfhydryl, mixed, conjugated, aqueous, layer, crosslinking, granulocyte, maleimidyl, preparation, wbc, dextran, manganese

We claim:

[*1] 1. Colloidal particles having a plurality of pendent functional groups on an exterior coating of aminodextran in which each particle comprises a solid metallic core coated with a first gelatin layer of type B, alkali cured gelatin of Bloom in the range 60 to 225 and a second layer of an aminodextran, said layers having been either (a) crosslinked by the action of a chemical crosslinking agent or (b) ...

... [*16] preparing discrete colloidal particles having a plurality of pendent functional groups on an exterior coating of aminodextran in which each particle comprises a solid metallic core coated either with biodegrable, crosslinked or condensed layers of type B, alkali cured gelatin of Bloom 60 to 225 and an aminodextran, said process comprising;

(a) (i) (1) preparing metallic core particles in said gelatin or (2) adsorbing as a ...

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LEVEL 1 - 29 OF 225 PATENTS

5,465,103

<=2> GET 1st DRAWING SHEET OF 6

Nov. 7, 1995

Display device with coordinate input function

INVENTOR: Yoshioka, Kazuo, Nagasaki, Japan

... [*1] for both displaying images and inputting coordinates, comprising:

a sensor means for sensing coordinate input detection signals from a control means;

a liquid crystal display panel of two-layer type including an optical phase compensation cell, as a first layer of the liquid crystal display panel and a liquid crystal display cell as a second layer of the liquid crystal display ...

PAGE 35

LEVEL 1 - 30 OF 225 PATENTS

5,441,516

<=2> GET 1st DRAWING SHEET OF 5

Aug. 15, 1995

Temporary stent

INVENTOR: Wang, Lixiao, Maple Grove, Minnesota
Willard, Martin R., Maple Grove, Minnesota
Tran, Thomas T., Coon Rapids, Minnesota
Hastings, Roger, Maple Grove, Minnesota

Schmaltz, Dale F., Boulder, Colorado
Holman, Thomas J., Minneapolis, Minnesota

... [*15] closely wound helices each comprises at least two oppositely wound windings forming multiple layers.

[*16] 16. The apparatus of claim 1 wherein the closely wound helices are each of at least the two filar double layer type.

[*17] 17. The apparatus of claim 16 wherein the closely wound helices are of at least the four filar double layer type.

[*18] 18. The apparatus of claim 1 wherein a proximal elongate portion of the outer tubular member is comprised of a polymeric/braided composite joined to a distal wire wound portion.

[*19] 19. The apparatus of claim 18 wherein the polymeric portion of the composite is polyimide.

[*20] 20. The apparatus of claim 18 wherein the wire wound portion is of at least the four filar double layer type.

[*21] 21. The apparatus of claim 1 wherein a proximal elongate portion of the inner tubular member is comprised of a polymeric/braided composite joined to a distal wire wound portion.

[*22] 22. The apparatus of claim 21 wherein the polymeric portion of the composite is polyimide.

[*23] 23. The apparatus of claim 21 wherein the wire wound portion is of at least the four filar double layer type.

[*24] 24. The apparatus of claim 1 including means connected to the proximal end portion of the catheter for introducing infusion fluid through one of the tubular members.

[*25] 25. The apparatus of claim 24 wherein the infusion fluid ...
PAGE 36

LEVEL 1 - 31 OF 225 PATENTS

5,432,038

<=2> GET 1st DRAWING SHEET OF 1

Jul. 11, 1995

Process for producing an organic photosensitive material preventing blushing

INVENTOR: Katsukawa, Masato, Osaka, Japan
Tanaka, Masashi, Osaka, Japan

... [*2] process for production according to claim 1, wherein the coefficient k is a number which is 0.13 or smaller.

[*3] 3. A process for production according to claim 1, wherein said electrophotographic photosensitive material is of the single layer type containing a charge-generating material, a charge-transporting material and a binder resin.

[*4] 4. A process for production according to claim 1, wherein said weight percentage (C) is from 0.1 to ...

PAGE 37

LEVEL 1 - 32 OF 225 PATENTS

5,428,244

<=2> GET 1st DRAWING SHEET OF 12

Jun. 27, 1995

Semiconductor device having a silicon rich dielectric layer

INVENTOR: Segawa, Mizuki, Kyoto, Japan
Kato, Yoshiaki, Hyogo, Japan
Nakaoka, Hiroaki, Osaka, Japan

... [*3] A semiconductor device as in either claim 1 or claim 2, further comprising a dielectric layer for passivation, said passivation dielectric layer being formed on said dielectric layer type, being composed of a chemical compound which is the same compound that said dielectric layer is composed of, and having a silicon content closer to a silicon content according to the stoichiometric composition formula, compared to the dielectric layer.

[*4] ...

PAGE 38

LEVEL 1 - 33 OF 225 PATENTS

5,420,052

<=2> GET 1st DRAWING SHEET OF 2

May 30, 1995

Method of fabricating a semiplanar heterojunction bipolar transistor

INVENTOR: Morris, Francis J., Plano, Texas
Yang, Jau-Yuann, Richardson, Texas
Plumton, Donald L., Dallas, Texas
Yuan, Han-Tzong, Dallas, Texas

... [*1] layer;

forming a collector plug region through a selected portion of the collector layer to the subcollector layer;

forming a base layer on the collector layer and the collector plug region;

forming an emitter layer type on the base layer;

forming an emitter cap layer on the emitter layer;

forming a collector contact on the collector plug region;

forming an emitter contact on the emitter cap layer;

forming a base contact on the ...

PAGE 39

LEVEL 1 - 34 OF 225 PATENTS

5,401,549

Mar. 28, 1995

Optical information recording medium

INVENTOR: Watase, Kenta, Tokyo, Japan

... [*1] layer is overlaid on both said reflective layer in said ROM region portion and a recording portion of the substrate in said recording region, said recording layer being of a multi-layer type comprising a dielectric layer and a magnetic layer.

[*2] 2. The optical information recording medium as claimed in claim 1, further comprising an additional reflective layer which is overlaid on said recording ...

PAGE 40

LEVEL 1 - 35 OF 225 PATENTS

5,390,208

<=2> GET 1st DRAWING SHEET OF 3

Feb. 14, 1995

Strained quantum well type semiconductor laser device

INVENTOR: Kasukawa, Akihiko, Tokyo, Japan
Kikuta, Toshio, Tokyo, Japan

What is claimed is:

[*1] 1. A strained quantum well layer type semiconductor laser device comprising a light emitting active layer of a multilayer structure including a quantum well layer and a barrier layer and a pair of light confining layers ...

... [*1] y P 1 - y (0 < y </= 1) and the barrier layer and/or the light confining layers are made of In 1 - x Ga x P (0 < x </= 1).

[*2] 2. A strained quantum well layer type semiconductor laser device according to claim 1, wherein the InAs y P 1 - y strained quantum well layer satisfies inequality:

SYMBOL OMITTED epsilon w x L w SYMBOL OMITTED < 45(% x nm),

where w is the ratio of deformation (%) and Lw is the thickness (nm) of each component layer of the strained quantum well layer.

[*3] 3. A strained quantum well layer type semiconductor laser device according to claim 1, wherein the In 1 - x Ga x P barrier layer and each of the In 1 - x Ga x P light confining layers satisfy ...

... [*3] OMITTED < 45(% x nm),

where s is the ratio of deformation (%) and Ls is the thickness (nm) of each component layer of the barrier layer and the light confining layers.

[*4] 4. A strained quantum well layer type semiconductor laser device according to claim 1, wherein InAs y P 1 - y (0 < y </= 1) has a value for compositional ratio y between 0.3 and 0.6.

PAGE 41

LEVEL 1 - 36 OF 225 PATENTS

5,387,564

Feb. 7, 1995

Molding and calcining of zeolite powder

INVENTOR: Takeuchi, Tatsuro, Tsukuba, Japan
Mouri, Motoya, Tsuchiura, Japan
Okabayashi, Saji, Kitakanbara, Japan
Miyamura, Shoichi, Kitakanbara, Japan

... [*21] a) a zeolite;

(b) a beta 1,3-glucan in an amount of 0.1-20 parts by weight in relation to 100 parts by weight of the zeolite; and

(c) a 1:1 layer-type clay mineral and a 2:1 layer clay mineral in a total amount of 5-50 parts by weight in relation to 100 parts by weight of the zeolite; and

(ii) at least ...

PAGE 42

LEVEL 1 - 37 OF 225 PATENTS

5,374,328

<=2> GET 1st DRAWING SHEET OF 9

Dec. 20, 1994

Method of fabricating group III-V compound

INVENTOR: Remba, Ronald D., Sunnyvale, California
Brunemeier, Paul E., Sunnyvale, California
Schmukler, Bruce C., Mountain View, California
Strifler, Walter A., Sunnyvale, California
Rosenblatt, Daniel H., Belmont, California

... [*5] 1-x As wherein (0 </= y < 0.2) and (0.2 < x </= 1.0).

[*6] 6. A method of making a semiconductor device comprising the steps of:

fabricating a structure by

(i) growing one or more layers of the type X a Y 1-a As, where X is an atom selected from the group of IIIA atoms and Y is a different atom selected from the group of IIIA atoms, and where (0 < a </= 1) upon a semiconductor ...

PAGE 43

LEVEL 1 - 38 OF 225 PATENTS

5,324,980

<=2> GET 1st DRAWING SHEET OF 24

Jun. 28, 1994

Multi-layer type semiconductor device with semiconductor element layers stacked in opposite direction and manufacturing method thereof

INVENTOR: Kusunoki, Shigeru, Hyogo, Japan

What is claimed is:

[*1] 1. A multi-layer type semiconductor device, comprising:

a substrate having a main surface;

a first semiconductor element layer formed on said main surface of said substrate and including a first semiconductor element having an active ...

... [*3] insulating layer.

[*4] 4. The device of claim 3, including a conductor filling said through-hole and contacting opposite surfaces of said first and second semiconductor element layers.

[*5] 5. A multi-layer type semiconductor device, comprising:

a substrate having a main surface;

a first semiconductor element layer formed on said main surface of said substrate and including a first semiconductor element having an active ...

... [*5] contact with said insulating layer and being oriented back-to-back on said first and second semiconductor element layers, each of said regions including one or more of the semiconductor elements.

[*6] 6. A multi-layer type semiconductor device, comprising:

a substrate having a main surface;

a first semiconductor element layer formed on said main surface of said substrate and including a first semiconductor element having an active ...

... [*6] second semiconductor element layers.

[*7] 7. The device of claim 6, wherein a through-hole is formed only through said field oxide layer and said interlayer insulation film.

[*8] 8. A multi-layer type semiconductor device, comprising:

a substrate having a main surface;

a first semiconductor element layer formed on said main surface of said substrate and including a first semiconductor element having an active ...

PAGE 45

LEVEL 1 - 39 OF 225 PATENTS

5,324,678

<=2> GET 1st DRAWING SHEET OF 24

Jun. 28, 1994

Method of forming a multi-layer type semiconductor device with semiconductor element layers stacked in opposite directions

INVENTOR: Kusunoki, Shigeru, Hyogo, Japan

What is claimed is:

[*1] 1. A method of manufacturing a multi-layer type semiconductor device comprising the steps of;

forming a base member by successively stacking, on a main surface of a first substrate, a first semiconductor layer, an insulating layer and a second ...

... [*1] semiconductor device by using said first semiconductor layer as a base with an exposed surface of said first semiconductor layer directed upward.

[*2] 2. A method of manufacturing a multi-layer type semiconductor device according to claim 1, wherein the step of forming the base member includes the steps of;

bonding a first member including said first semiconductor layer formed on said first substrate, with a ...

... [*2] said insulating layer and said first semiconductor layer are opposed to each other, and

thinning said third substrate the expose said second semiconductor layer.

[*3] 3. A method of manufacturing a multi-layer type semiconductor device comprising the steps of;

forming perforations through a first substrate;

filling said perforations with conductors,

successively forming a first semiconductor layer on a main surface of a second ...

LEVEL 1 - 40 OF 225 PATENTS

5,291,248

<=2> GET 1st DRAWING SHEET OF 8

Mar. 1, 1994

LED carriage selectively movable in two directions

INVENTOR: Isobe, Minoru, Tokyo, Japan

... [*3] L-shaped first block, an L-shaped second leaf spring having one end fixed to one end of the first block, and the other end fixed to a right end of the frame, a stacked-layer type of second piezoelectric element adapted to deform itself in response to an application of a voltage by a power source for deforming the second leaf spring, the second piezoelectric element being fixed to the ...

... [*5] comprises an L-shaped first block, an L-shaped leaf spring having one end fixed to one end of the first block, and the other end fixed to one end of a frame, a stacked-layer type of second piezoelectric element adapted to deform itself in response to an application of a voltage by a power source for deforming the leaf spring, the second piezoelectric element being fixed to the other ...

... [*18] L-shaped first block, an L-shaped second leaf spring having one end fixed to one end of the first block, and the other end fixed to a right end of the frame, a stacked-layer type of second piezoelectric element adapted to deform itself in response to an application of a voltage by a power source for

deforming the second leaf spring, the second piezoelectric element being fixed to the ...

... [*20] comprises an L-shaped first block, an L-shaped leaf spring having one end fixed to one end of the first block, and the other end fixed to one end of a frame, a stacked-layer type of second piezoelectric element adapted to deform itself in response to an application of a voltage by a power source for deforming the leaf spring, the second piezoelectric element being fixed to the other ...

PAGE 47

LEVEL 1 - 41 OF 225 PATENTS

5,289,486

<=2> GET 1st DRAWING SHEET OF 5

Feb. 22, 1994

Semiconductor luminous element and superlattice structure

INVENTOR: Iga, Kenichi, Machida, Japan
Koyama, Fumio, Hino, Japan
Takagi, Takeshi, Ibaraki, Japan

... [*8] between the active layer and the multi-quantum barrier layer.

[*9] 9. A superlattice structure, comprising alternating layers of at least two types of crystals having different energy gaps,

wherein the energy gaps of adjacent crystal layers are such that the type of crystal having the smaller energy gap of the adjacent layers has an energy gap which is smaller than that of a portion of the superlattice structure on a side through which electrons or holes enter the superlattice structure, and

wherein the thicknesses and structures of the adjacent crystal ...

PAGE 48

LEVEL 1 - 42 OF 225 PATENTS

5,275,714

<=2> GET 1st DRAWING SHEET OF 1

Jan. 4, 1994

Method of producing an absorber layer for solar cells with the aid of electrodeposition

INVENTOR: Bonnet, Dieter, Friedrichsdorf, Federal Republic of Germany
Ehrhardt, Josef, Hochheim/Main, Federal Republic of Germany
Hewig, Gert, Alzenau, Federal Republic of Germany

... [*1] electroplating bath and simultaneously incorporating a third alloy component of Group VIA suspended in the electroplating bath in finely dispersed form by dispersion electrolysis, and

producing a ternary semiconductor layer of the type IB-IIIA-VIA by heat treating the deposited material.

[*2] 2. The method according to claim 1, wherein the volume percentage of each component of the binary alloy is between about 25% and 75%.

[*3] 3. The method ...

LEVEL 1 - 43 OF 225 PATENTS

5,272,031

Dec. 21, 1993

Benzidine derivative and photosensitive material using said derivative

INVENTOR: Hanatani, Yasuyuki, Osaka, Japan
Iwasaki, Hiroaki, Osaka, Japan

... [*2] material containing a conductive substrate having thereon a photosensitive layer which contains the benzidine derivative (1) according to claim 1.

[*3] 3. The photosensitive material according to claim 2, wherein the photosensitive layer is a multi-layer type photosensitive layer comprising an electric charge transferring layer and an electric charge generating layer which are laminated mutually.

[*4] 4. The multi-layer type photosensitive material according to claim 3, wherein the electric charge transferring layer contains 25 to 200 parts by weight of said benzidine derivative (1) for 100 parts by weight of a ...

... [*5] compounds, and pyrrolopyrrole compounds.

[*6] 6. The photosensitive material according to claim 5, wherein the electric charge generating material is an azo compound.

[*7] 7. The photosensitive material according to claim 2, wherein the photosensitive layer is a single-layer type photosensitive layer comprised of an electric charge transferring material, an electric charge generating material and a binding resin.

[*8] 8. The photosensitive material according to claim 7, wherein the single-layer type photosensitive layer contains 40 to 200 parts by weight of said benzidine derivative (1) for 100 parts by weight of a binding resin.

[*9] 9. The photosensitive material according to claim 8, wherein the single-layer type photosensitive layer contains, for 100 parts by weight of a

Oct. 26, 1993

Hydrazone compound and photosensitive material using said compound

INVENTOR: Hanatani, Yasuyuki, Sakai, Japan
Iwasaki, Hiroaki, Hirakata, Japan

... [*1] halogen atom, an alkyl group, an alkoxy group or the following group: [See Original Patent for Chemical Structure Diagram]

[*2] 2. The photosensitive material according to claim 1, wherein the photosensitive layer is a multi-layer type photosensitive layer including an electric charge transferring layer which includes the hydrazone compound as the electric charge transferring material, and an electric charge generating layer, which layers are laminated mutually.

[*3] 3. The photosensitive material according to claim 2, wherein the electric charge transferring layer of the multi-layer type photosensitive layer further includes a binding resin, and the electric charge transferring layer contains 25 to 200 parts by weight of said hydrazone compound for 100 parts by weight of the ...

... [*4] compounds, and pyrrolopyrrole compounds.

[*5] 5. The photosensitive material according to claim 4, wherein the electric charge generating material is an azo compound.

[*6] 6. The photosensitive material according to claim 1, wherein the photosensitive layer is a single-layer type photosensitive layer comprised of an electric charge transferring material, an electric charge generating material and a binding resin.

[*7] 7. The photosensitive material according to claim 6, wherein the single-layer type photosensitive layer contains 40 to 200 parts by weight of said hydrazone compound for 100 parts by weight of the binding resin.

[*8] 8. The photosensitive material according to claim 7, wherein the single-layer type photosensitive layer contains, for 100 parts by weight of the binding resin, 2 to 20 parts by weight of one or more kinds of an electric charge generating material selected from selenium, selenium- ...

E 53

PAG

LEVEL 1 - 47 OF 225 PATENTS

5,254,423

<=2> GET 1st DRAWING SHEET OF 1

Oct. 19, 1993

[*20] 20. A liquid jet recording head as claimed in claim 18 wherein said piezo-electric member has a plurality of grooves which are formed on said piezo-electric ...

LEVEL 1 - 45 OF 225 PATENTS

5,258,251

Nov. 2, 1993

Hydrazone compound and photosensitive material using said compound

INVENTOR: Hanatani, Yasuyuki, Sakai, Japan
Iwasaki, Hiroaki, Hirakata, Japan

... [*1] same or different from one another, and each is a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group.

[*2] 2. The photosensitive material according to claim 1, wherein the photosensitive layer is a multi-layer type photosensitive layer including an electric charge transferring layer which includes the hydrazone compound as the electric charge transferring material, and an electric charge generating layer, which layers are laminated mutually.

[*3] 3. The photosensitive material according to claim 2, wherein the electric charge transferring layer of the multi-layer type photosensitive layer further includes a binding resin, and the electric charge transferring layer contains 25 to 200 parts by weight of said hydrazone compound for 100 parts by weight of the ...

... [*4] compounds, and pyrrolopyrrole compounds.

[*5] 5. The photosensitive material according to claim 4, wherein the electric charge generating material is an azo compound.

[*6] 6. The photosensitive material according to claim 1, wherein the photosensitive layer is a single-layer type photosensitive layer comprised of an electric charge transferring material, an electric charge generating material and a binding resin.

[*7] 7. The photosensitive material according to claim 6, wherein the single-layer type photosensitive layer contains 40 to 200 parts by weight of said hydrazone compound for 100 parts by weight of the binding resin.

[*8] 8. The photosensitive material according to claim 7, wherein the single-layer type photosensitive layer contains, for 100 parts by weight of the binding resin, 2 to 20 parts by weight of one or more kinds of an electric charge generating material selected from selenium, selenium- ...

E 52

PAG

LEVEL 1 - 46 OF 225 PATENTS

5,256,508

binding resin, 5 to 500 parts by weight of one or more kinds of an electric charge generating material selected from selenium, ...

LEVEL 1 - 44 OF 225 PATENTS

5,260,723

<=2> GET 1st DRAWING SHEET OF 10

Nov. 9, 1993

Liquid jet recording head

INVENTOR: Naruse, Osamu, Kanagawa, Japan
Ameyama, Minoru, Kanagawa, Japan
Matsumoto, Syuzo, Kanagawa, Japan
Komai, Hiromichi, Kanagawa, Japan
Hirata, Tositaka, Tokyo, Japan

... [*1] between 0.01 Kg/mm<2 > and 300 Kg/mm<2> .

[*2] 2. A liquid jet recording head as claimed in claim 1 wherein said piezo-electric member is a layer-type piezo-electric member.

[*3] 3. A liquid jet recording head as claimed in claim 1 further comprising a driver unit driving said piezo-electric elements.

[*4] 4. ...

... [*6] flow paths.

[*7] 7. A liquid jet recording head as claimed in claim 6 wherein each of said first piezo-electric member and said second piezo-electric member is a layer-type piezo-electric member.

[*8] 8. A liquid jet recording head as claimed in claim 6 wherein said elasticity member has a modulus of elasticity between 0.01 Kg/mm<2 > and ...

... [*13] elements in a direction perpendicular to said second flow paths.

[*14] 14. A liquid jet recording head as claimed in claim 13 wherein said piezo-electric member is a layer-type piezo-electric member.

[*15] 15. A liquid jet recording head as claimed in claim 13 wherein said elasticity member has a modulus of elasticity between 0.01 Kg/mm<2 > and ...

... [*18] elements in the perpendicular direction to each of said plurality of flow paths.

[*19] 19. A liquid jet recording head as claimed in claim 18 wherein said piezo-electric member is a layer-type piezo-electric member.

Electrophotographic photosensitive member, and electrophotographic apparatus, device unit and facsimile machine having the photosensitive member

INVENTOR: Mayama, Shinya, Yamato, Japan
Fujimura, Naoto, Yokohama, Japan
Yoshihara, Toshiyuki, Inagi, Japan
Sakai, Kiyoshi, Hachioji, Japan
Anayama, Hideki, Yokohama, Japan
Ainoya, Hideyuki, Tokyo, Japan
Aoki, Katsumi, Yokohama, Japan

... [*21] 21. The electrophotographic photosensitive member according to claim 19, wherein said charge generation layer is the surface layer.

[*22] 22. The electrophotographic photosensitive member according to claim 18, wherein said photosensitive layer is of a single layer type.

[*23] 23. The electrophotographic photosensitive member according to claim 1, wherein said surface layer is a surface protective layer.

[*24] 24. The electrophotographic photosensitive member according to claim 1, wherein said electrophotographic photosensitive member has ...

PA GE 54

LEVEL 1 - 48 OF 225 PATENTS

5,247,445

<=2> GET 1st DRAWING SHEET OF 5

Sep. 21, 1993

Control unit of an internal combustion engine control unit utilizing a neural network to reduce deviations between exhaust gas constituents and predetermined values

INVENTOR: Miyano, Hideyo, Niza, Japan
Suzaki, Yukihiko, Nerima, Japan
Takahashi, Fumitaka, Hoya, Japan
Ogasawara, Ken-ichi, Fujimi, Japan

... [*7] units as the number of cylinders, and an intermediate layer arranged between said input layer and said output layer; and wherein the units are coupled with predetermined coupling weights only across the layers to form a three-layer type perceptron neural network.

[*8] 8. A control unit for an internal combustion engine according to claim 7 wherein said control means corrects said coupling weights among the units by applying a back propagation learning method to said three-layer type perceptron neural network, and corrects the correction coefficient for said calculation means.

[*9] 9. A control unit for an internal combustion engine according to claim 7 wherein said control means corrects ...

... [*22] units as the number of cylinders, and an intermediate layer arranged between said input layer and said output layer; and wherein the units are coupled with predetermined coupling weights only across the layers to form a three-layer type perceptron neural network.

[*23] 23. A control unit for an internal combustion engine according to claim 22 wherein said control means corrects said coupling weights among the units by applying a back propagation learning method to said three-layer type perceptron neural network, and corrects the correction coefficient for said calculation means.

[*24] 24. A control unit for an internal combustion engine according to claim 22 wherein said control means corrects ...

LEVEL 1 - 49 OF 225 PATENTS

5,244,561

<=2> GET 1st DRAWING SHEET OF 3

Sep. 14, 1993

Process and apparatus for the electrochemical determination of pCO2 in blood

INVENTOR: Calzi, Claudio, Milan, Italy
Tancredi, Gabrio, Milan, Italy

... [*3] 3. The process of claim 1, wherein the measurement liquid is high-purity water.

[*4] 4. The process of claim 1, wherein the measuring cell is a conductivity cell.

[*5] 5. The process of claim 4, wherein the conductivity cell is of the thin layer type.

[*6] 6. The process of claim 1, wherein the means of removing ionic impurities are ion exchangers.

[*7] 7. The process of 6, wherein the ion exchangers are in mixed bed form.

[*8] 8. The process of claim 7, wherein the ion exchangers ...

... [*12] 12. The apparatus of claim 10, wherein the measurement liquid is high-purity water.

[*13] 13. The apparatus of claim 10, wherein the measuring cell is a conductivity cell.

[*14] 14. The apparatus of claim 13, wherein the conductivity cell is of the thin layer type.

[*15] 15. The apparatus as claimed in claim 10, wherein the means for removing ionic impurities are ion exchangers.

[*16] 16. The apparatus of claim 10, wherein the ion exchangers are in mixed bed form.

[*17] 17. The ...

LEVEL 1 - 50 OF 225 PATENTS

5,242,839

<=2> GET 1st DRAWING SHEET OF 6

Sep. 7, 1993

Method of manufacturing an integrated photoelectric receiving device

INVENTOR: Oh, Kwang-Ryong, Daejeon, Republic of Korea
Lee, Yong-Tak, Daejeon, Republic of Korea

... [*1] layer, an etching stopper layer and an absorption layer on the substrate etched;

c) removing the absorption layer excluding the photodetector forming area on the substrate by the selective etchant;

d) sequentially removing the etching stopper layer and the type n-channel layer between the photodetector and the transistor forming areas to electrically insulate the photodetector and the transistor;

e) sequentially forming a p-type InP layer and a p-type InGaAs layer on the

...

LEVEL 1 - 51 OF 225 PATENTS

5,240,964

<=2> GET 1st DRAWING SHEET OF 1

Aug. 31, 1993

Process for producing urethane foam with high density skin

INVENTOR: Ohmura, Hirokazu, Niiza, Japan
Yoshimura, Kimio, Urawa, Japan
Narumi, Satoshi, Tochigi, Japan

What is claimed is:

[*1] 1. A process for producing a urethane foam having a high density outer surface layer, of the type wherein a plastic liquid containing di or polyisocynates, polyols, a catalyst, low-molecular polyols used as a crosslinker or a chain extender, a blowing agent consisting of water, and an assistant is ...

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LEVEL 1 - 52 OF 225 PATENTS

5,236,755

<=2> GET 1st DRAWING SHEET OF 1

Aug. 17, 1993

Optical recording elements

INVENTOR: Howe, Steven D., Suffolk, England
Dorey, Lynn Y., Essex, England

... [*5] element as claimed in claims 1, 2, 3, or 4 in which the element is in the form of a tape.

[*6] 6. An element as claimed in any one of claims 1 to 4, wherein the absorbing layer is of the type which is thermally deformed to form optically readable pits when subject to heating by laser radiation of said given wavelength.

[*7] 7. An optical recording element as claimed in any one of claims 1 to 4, ...

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LEVEL 1 - 53 OF 225 PATENTS

5,214,664

<=2> GET 1st DRAWING SHEET OF 15

May 25, 1993

Multiple wavelength semiconductor laser

INVENTOR: Paoli, Thomas L., Los Altos, California

... [*4] emitting multiple wavelength solid state laser, comprising:

a plurality of contiguous layers of semiconductor material deposited on a substrate, one of said layers comprising a multiple quantum well active layer of the type wherein at least two quantum wells contained therein are formed such that one quantum level of a first quantum well is at the same energy level as a different quantum level of the second quantum well;

resonant ...

... [*18] multiple wavelength solid state laser, comprising:

a substrate;

a first cladding layer disposed on said substrate;

a multiple quantum well active layer disposed on said first cladding layer of the type having at least two adjacent quantum wells, a first of said quantum wells having a first energy bandgap between the lowest energy level of its conduction band and the uppermost level of its valence band and a ...

... [*23] multiple wavelength solid state laser, comprising:

a substrate;

a first cladding layer disposed on said substrate;

a multiple quantum well active layer disposed on said first cladding layer of the type having at least two adjacent quantum wells, a first of said quantum wells having a first thickness and a second of said quantum wells having a second thickness which is greater than said first thickness, ...

E 60

LEVEL 1 - 54 OF 225 PATENTS

5,213,926

May 25, 1993

Phenylenediamine derivative and photosensitive material using said derivative

INVENTOR: Hanatani, Yasuyuki, Sakai, Japan
Iwasaki, Hiroaki, Hirakata, Japan

... [*2] material containing a conductive substrate having thereon a photosensitive layer which contains the phenylenediamine derivative (1) according to claim 1.

[*3] 3. The photosensitive material according to claim 2, wherein the photosensitive layer is a multi-layer type photosensitive layer comprising an electric charge transferring layer on an electric charge generating layer which are laminated mutually.

[*4] 4. The multi-layer type photosensitive material according to claim 3, wherein the electric charge transferring layer contains 25 to 200 parts by weight of said phenylenediamine derivative (1) for 100 parts by weight of a ...

... [*5] compounds, and pyrrolopyrrole compounds.

[*6] 6. The photosensitive material according to claim 5, wherein the electric charge generating material is an azo compound.

[*7] 7. The photosensitive material according to claim 2, wherein the photosensitive layer is a single-layer type photosensitive layer comprised of an

electric charge transferring material, an electric charge generating material and a binding resin.

[*8] 8. The photosensitive material according to claim 7, wherein the single-layer type photosensitive layer contains 40 to 200 parts by weight of said phenylenediamine derivative (1) for 100 parts by weight of a binding resin.

[*9] 9. The photosensitive material according to claim 8, wherein the single-layer type photosensitive layer contains, for 100 parts by weight of a binding resin, 2 to 20 parts by weight of one or more kinds of an electric charge generating material selected from the group ...

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LEVEL 1 - 55 OF 225 PATENTS

5,200,969

<=2> GET 1st DRAWING SHEET OF 15

Apr. 6, 1993

Switchable multiple wavelength semiconductor laser

INVENTOR: Paoli, Thomas L., Los Altos, California

... [*1] two different output wavelengths, comprising:

a laser body of the type including a plurality of contiguous layers of semiconductor material, located in an optical path, at least first and second portions of said layers of the type providing carrier quantization in at least one dimension, wherein said first and second portions are formed such that one quantum level of said first portion is at the same energy level as a different quantum ...

... [*2] different output wavelengths, comprising:

a laser body of the type including a plurality of contiguous layers of semiconductor material, located in an optical path, at least a first and second portions of said layers of the type providing carrier quantization in at least one dimension, wherein said first and second portions thereof are formed such that one quantum level of said first portion is at the same energy level as a different quantum ...

PAGE 62

LEVEL 1 - 56 OF 225 PATENTS

5,196,143

Mar. 23, 1993

Mixed metal hydroxide-clay adducts as thickeners for water and other hydrophylic fluids

INVENTOR: Burba, III, John L., Angleton, Texas
Barnes, Audrey L., Lake Jackson, Texas

... [*13] saconite, sepiolite, vermiculite, attapulgite, and Fuller's earth.

[*14] 14. The adduct or reaction product of claim 1 wherein the mineral clay is at least one of the classes consisting of amorphous clays of the allophane group and crystalline clays of the 2-layer type, 3-layer type, expanding type, non-expanding type, elongate, regular mixed layer type, and chain structure type.

[*15] 15. The adduct or reaction product of claim 1 wherein the mineral clay is bentonite.

[*16] 16. The adduct or reaction product of claim 1 wherein the mineral clay is beneficiated bentonite.

[*17] 17. The adduct or reaction ...

LEVEL 1 - 57 OF 225 PATENTS

5,189,567

<=2> GET 1st DRAWING SHEET OF 3

Feb. 23, 1993

High speed switching circuit for controlling current flow in a bridge circuit coil for use in a magneto-optic direct overwrite system

INVENTOR: Mody, Hemant K., Rochester, New York

What is claimed is:

[*1] 1. A direct over-write magneto-optic recording apparatus for recording digital information in a magnetic recording layer of the type having vertically oriented magnetic domains, said digital information identified by a digital information source, said apparatus comprising:

(a) means for scan-irradiating the recording layer with a beam of ...

... [*3] by claim 2, wherein said switching elements are comprises of triacs.

[*4] 4. A direct over-write magneto-optic recording apparatus for recording digital information in a magnetic recording layer of the type having vertically oriented magnetic domains, wherein an information data source provides control signals identifying data to be stored by said recording apparatus, said apparatus comprising:

(a) means for scan- ...

... [*6] alternates directions during each cycle of said predetermined frequency.

[*7] 7. A direct over-write magneto-optic recording apparatus for recording digital information in a magnetic recording layer of the type having magnetic domains with a plurality of vertical orientations, wherein said digital information to be recorded is represented by control signals determining a representation of said digital information by said recording layer, ...

LEVEL 1 - 58 OF 225 PATENTS

5,189,500

<=2> GET 1st DRAWING SHEET OF 24

Feb. 23, 1993

Multi-layer type semiconductor device with semiconductor element layers stacked in opposite directions and manufacturing method thereof

INVENTOR: Kusunoki, Shigeru, Hyogo, Japan

What is claimed is:

[*1] 1. A multi-layer type semiconductor device comprising;

a transparent substrate,

a photosensor layer formed on said transparent substrate and including photosensor elements for detecting light passing through said transparent substrate and converting the ...

... [*1] photosensor elements of said photosensor layer and electrically connected to said circuit layer via said through holes for displaying results of processing output from said circuit layer.

[*2] 2. A multi-layer type semiconductor device according to claim 1, further comprising a light shielding layer interposed between said photosensor layer and said circuit layer for preventing light traveling through said photosensor layer toward said circuit layer from entering said circuit layer.

[*3] 3. A multi-layer type semiconductor device according to claim 1, which is formed of materials penetrable to light as a single chip.

[*4] 4. A multi-layer type semiconductor device according to claim 3, which, formed as the single chip, has a light transmittance of at least 5%.

[*5] 5. A multi-layer type semiconductor device according to claim 1, wherein said display element layer includes transmission type liquid crystal display elements for giving a display based on variations of light passing therethrough, ...

... [*5] layer formed between said display element layer and said circuit layer and including light emitting elements for projecting light to said liquid crystal display elements.

[*6] 6. A multi-layer type semiconductor device according to claim 5, further comprising a light shielding layer interposed between said light emitting element layer and said circuit layer for preventing light traveling from said light emitting element layer toward said circuit layer from entering said circuit layer.

[*7] 7. A multi-layer type semiconductor device according to claim 1, wherein said display element layer includes reflection type liquid crystal display elements for giving a display based on variations of reflected light.

[*8] 8. A multi-layer type semiconductor device according to claim 1, wherein said display element layer includes light emitting elements for giving a display based on self-emission of light.

[*9] 9. A multi-layer type semiconductor device according to claim 8, further comprising a light shielding layer interposed between said display element layer and said circuit layer for preventing light traveling from said display element layer toward said circuit layer from entering said circuit layer.

[*10] 10. A multi-layer type semiconductor device comprising;

a transparent substrate,

a display element layer including display elements and formed on said transparent substrate such that a display given by said display elements is visible ...

... [*10] connected to said circuit layer via said through holes for converting an amount of information received from outside into an electric signal for processing by said circuit layer.

[*11] 11. A multi-layer type semiconductor device according to claim 10, wherein said sensor layer includes a photosensor element for detecting light.

[*12] 12. A multi-layer type semiconductor device according to claim 10, wherein said sensor layer includes a temperature sensing element for detecting temperature.

[*13] 13. A multi-layer type semiconductor device according to claim 10, wherein said sensor layer includes a pressure sensing element for detecting pressure.

[*14] 14. A multi-layer type semiconductor device according to claim 10, wherein said sensor layer includes a sensing element for detecting radiation.

[*15] 15. A multi-layer type semiconductor device comprising;

a substrate defining perforations and having conductors formed in said perforations,

a first circuit layer formed on said substrate and including an electric circuit electrically connected to said ...

LEVEL 1 - 59 OF 225 PATENTS

5,189,297

<=2> GET 1st DRAWING SHEET OF 2

Feb. 23, 1993

Planar double-layer heterojunction HgCdTe photodiodes and methods for fabricating same

INVENTOR: Ahlgren, William L., Goleta, California

... [*19] atoms selected for type-converting the underlying collector layer to an opposite type of electrical conductivity;

illuminating the dopant layer and the underlying surface of the collector layer with the source; and

diffusing the dopant layer into the underlying collector layer thereby type-converting the underlying collector layer to an opposite type of conductivity.

[*20] 20. A method as defined in claim 13 wherein the step of forming a base layer is accomplished by forming an n-type ...

... [*21] depositing the liberated dopant atoms over the surface of the collector layer, the dopant atoms being deposited upon the surface only where a photodiode is not desired; and

diffusing the deposited dopant atoms into the underlying collector layer thereby type-converting the underlying collector layer to an n-type of conductivity.

[*22] 22. A method as defined in claim 13 and further comprising a step of depositing a passivation layer at least over the ...

LEVEL 1 - 60 OF 225 PATENTS

5,187,680

<=2> GET 1st DRAWING SHEET OF 15

Feb. 16, 1993

Neural net using capacitive structures connecting input lines and differentially sensed output line pairs

INVENTOR: Engeler, William E., Scotia, New York

... [*11] lines that are identified by the same ordinal number connected to be receptive of the same input signal, thereby to provide a neural network layer.

[*12] 12. A plurality, L in number, of neural net layers of the type set forth in claim 11, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the non-linear amplifiers of the processors ...

... [*18] lines that are identified by the same ordinal number connected to be receptive of the same input signal, thereby to provide a neural network layer.

[*19] 19. A plurality, L in number, of neural net layers of the type set forth in claim 18, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the non-linear amplifiers of the processors ...

... [*27] lines that are identified by the same ordinal number connected to be receptive of the same input signal, thereby to provide a neural network layer.

[*28] 28. A plurality, L in number, of neural net layers of the type set forth in claim 27, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th > , L being a positive integer, the non-linear amplifiers of the processors ...

LEVEL 1 - 61 OF 225 PATENTS

5,185,228

Feb. 9, 1993

Electrophotosensitive material containing p-benzylbiphenyl

INVENTOR: Maeda, Tatsuo, Kobe, Japan
Katsukawa, Masato, Ibaraki, Japan
Iwasaki, Hiroaki, Hirakata, Japan
Mizuta, Yasufumi, Kishiwada, Japan

... [*3] benzylbiphenyl is included in an amount of 20 to 150 parts by weight for 100 parts by weight of m-phenylenediamine.

[*4] 4. An electrophotosensitive material according to claim 2, wherein the layer is a single-layer type photosensitive layer containing a charge generating material.

[*5] 5. An electrophotosensitive material according to claim 4, wherein the charge generating material is a perylene compound.

[*6] 6. An electrophotosensitive material according to claim 2, wherein the

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  Tue, 22 Dec 1998 12:45:15 -0500
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  Tue, 22 Dec 1998 12:45:15 -0500
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To: dmorris@watson.ibm.com
Subject: LEXIS(R)/NEXIS(R) Print Request Job 68990, 2 of 4

...

... [*7] contained in an amount of 20 to 150 parts by weight for 100 parts by weight of charge transfer material.

[*8] 8. An electrophotosensitive material according to claim 1, wherein the layer is a single-layer type photosensitive layer containing a charge generating material.

[*9] 9. An electrophotosensitive material according to claim 8, wherein the charge generating material is a perylene compound.

[*10] 10. An electrophotosensitive material according to claim 1, wherein the ...

LEVEL 1 - 62 OF 225 PATENTS

5,179,457

<=2> GET 1st DRAWING SHEET OF 7

Jan. 12, 1993

Liquid crystal display device with birefringent film between the substrates of the liquid crystal

INVENTOR: Hirataka, Jun-ichi, Hitachi, Japan
Kondo, Katsumi, Katsuta, Japan
Tomioka, Yasushi, Hatoyama, Japan
Imazeki, Shuji, Hatoyama, Japan
Taniguchi, Yoshio, Hino, Japan

... [*9] pair of electrode structures,

a liquid crystal layer sandwiched between said pair of substrates and electrode structures, and

an optical birefringent device disposed between said pair of substrates including a solid layer type structure substantially transparent to a light employed wherein a pattern is formed in said structure by two areas, each area having a different birefringent property and said pattern is arranged within the ...

LEVEL 1 - 63 OF 225 PATENTS

5,169,754

Dec. 8, 1992

Biodegradable particle coatings having a protein covalently immobilized by means of a crosslinking agent and processes for making same

INVENTOR: Siiman, Olavi, Davie, Florida
Burshteyn, Alexander, Miami Lakes, Florida
Gupta, Ravinder K., Pembroke Pines, Florida

... [*1] particles in which each particle comprises a solid core coated with two layers of water soluble gelatin having a plurality of pendant functional groups, said gelatin layers comprising a first layer of type B, alkali cured gelatin of Bloom in the range 60 to 225 and a second layer of type A, acid cured gelatin of Bloom in the range 60 to 300, and said layers on the individual particles being crosslinked by the action of a chemical crosslinking agent such that aid particles can be ...

... [*27] colloidal sized solid core material;

(b) a gelatin coating adsorbed onto the surface of said solid core and crosslinked thereon by a chemical crosslinking agent, said gelatin coating comprising first layer of type B, alkali cured gelatin of Bloom in the range 60 to 225 and a second layer of type A, acid cured gelatin of Bloom in the range of 60 to 300;

(c) an antibody; and

(d) a bridging group having an end covalently bonded to said crosslinked gelatin surface and another end covalently ...

... [*43] a) contacting a solution containing a biological substance with an antibody covalently bound to the surface of a crosslinked gelatin coated solid core particle wherein said gelatin coating comprises a first layer of type B, alkali cured gelatin of Bloom in the range 60-225 and a second layer of type A, acid cured gelatin of Bloom in the range of 60-300;

(b) incubating the mixture of step (a) for a time and at a temperature sufficient to insure the formation of a complex between ...

LEVEL 1 - 64 OF 225 PATENTS

5,162,782

<=2> GET 1st DRAWING SHEET OF 4

Nov. 10, 1992

Display device with coordinate input function

INVENTOR: Yoshioka, Kazuo, Nagasaki, Japan

... [*1] for both displaying images and inputting coordinates, comprising:

a sensor means for sensing coordinate input detection signals from a control means;

a liquid crystal display panel of two-layer type including an optical phase liquid crystal compensation cell as a first layer of the liquid crystal display panel and a liquid crystal display cell as a second layer of the liquid ...

... [*1] signals to said sensor means.

[*2] 2. A display device with coordinate input function as set forth in claim 1, wherein an image display screen of the liquid crystal display panel of two-layer type is divided into plural areas to be separately driven.

PAGE 72

LEVEL 1 - 65 OF 225 PATENTS

5,148,259

<=2> GET 1st DRAWING SHEET OF 13

Sep. 15, 1992

Semiconductor device having thin film wiring layer of aluminum containing carbon

INVENTOR: Kato, Takashi, Sagamihara, Japan
Ito, Takashi, Kawasaki, Japan
Maeda, Mamoru, Tama, Japan

... [*8] carbon greater than an atomic percent of carbon contained in said third layer.

[*9] 9. A semiconductor device as claimed in claim 5 in which a plurality of pairs of said third layer type and said fourth layer type are provided on said fourth layer in alternate succession so that each third layer type is sandwiched between two fourth layer types.

[*10] 10. A semiconductor device as claimed in claim 1, in which grains of said second layer are generally oriented on a (200) plane.

[*11] 11. A semiconductor device as claimed ...

LEVEL 1 - 66 OF 225 PATENTS

5,146,542

<=2> GET 1st DRAWING SHEET OF 12

Sep. 8, 1992

Neural net using capacitive structures connecting output lines and differentially driven input line pairs

INVENTOR: Engeler, William E., Scotia, New York

... [*14] said training period of time for generating an error signal identified by the same ordinal number as said processor generating it.

[*15] 15. A plurality, L in number, of neural net layers of the type set forth in claim 14, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the output ports of the processors in ...

... [*26] input lines and the one of said (M + 1)<th > and 2M<th > input lines identified by ordinal number M higher.

[*27] 27. A plurality, L in number, of neural net layers of the type set forth in claim 25, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the non-linear amplifiers of the processors ...

... [*31] lines that are identified by the same ordinal number connected to be receptive of the same input signal, thereby to provide a neural network layer.

[*32] 32. A plurality, L in number, of neural net layers of the type set forth in claim 31, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the non-linear amplifiers of the processors ...

... [*33] said training period of time for generating an error signal identified by the same ordinal number as said processor generating it.

[*34] 34. A plurality, L in number, of neural net layers of the type set forth in claim 33, respectively identified by consecutive ordinal numbers zeroeth through (L - 1)<th> , L being a positive integer, the output ports of the processors in ...

LEVEL 1 - 67 OF 225 PATENTS

5,141,684

<=2> GET 1st DRAWING SHEET OF 2

INVENTOR: Katsukawa, Masato, Ibaraki, Japan
Kimoto, Keizo, Hirakata, Japan
Tsujita, Mitsuji, Osaka, Japan
Miura, Satoru, Shijonawate, Japan

We claim:

[*1] 1. An electrophotosensitive material having a single-layer type photosensitive layer formed on the surface of a conductive substrate, wherein the photosensitive layer includes a charge generating material a polycarbonate resin as a binding resin, said polycarbonate resin being ...

... [*2] according to claim 1, wherein the photosensitive layer includes a perylene compound as the charge generating material..

[*3] 3. A method of manufacturing an electrophotosensitive material, said electrophotosensitive material being a single-layer type photosensitive layer formed on the surface of a conductive substrate, wherein the photosensitive layer a charge generating material includes a polycarbonate resin as a binding resin, said polycarbonate resin being ...

... [*5] compound represented by formula (II) is includes in an amount of 40 to 200 parts by weight per 100 parts by weight of the polycarbonate resin.

[*6] 6. An electrophotosensitive material having a single-layer type photosensitive layer formed on the surface of a conductive substrate, wherein the photosensitive layer includes a charge generating material a polycarbonate resin represented by the following formula (I): [See Original Patent ...

... [*6] said photosensitive layer being not greater than 2.5 x 10< - 3 > mu l/mg.

[*7] 7. A method of manufacturing an electrophotosensitive material, said electrophotosensitive material being a single-layer type photosensitive layer formed on the surface of a conductive substrate, wherein the photosensitive layer a charge generating material includes a polycarbonate resin represented by the following formula (I): [See Original Patent ...

LEVEL 1 - 70 OF 225 PATENTS

5,126,210

<=2> GET 1st DRAWING SHEET OF 2

Jun. 30, 1992

Anodic phosphonic/phosphinic acid duplex coating on valve metal surface

INVENTOR: Wieserman, Larry F., Apollo, Pennsylvania
Wefers, Karl, Apollo, Pennsylvania

Gary A., Natrona, Pennsylvania
lward S., New Kensington, Pennsylvania

] copper, manganese, molybdenum, chromium, nickel, zinc, vanadium, boron, lithium and zirconium; and

uplex layer comprised of:

intermediate layer consisting essentially of a non-porous barrier valve metal oxide attached to said base layer; and

acid resistant, functionalized layer of a monomeric -containing compound chemically bonded to a surface of said oxide functionalized ...

] 9. A layered material comprised of:

ase layer of aluminum alloy; and

uplex layer comprised of:

intermediate layer consisting essentially of a non-porous barrier aluminum oxide attached to said base layer; and

acid resistant, functionalized layer of an organic monomeric -containing compound chemically bonded to a surface of said oxide

10. The layered ...

31] A layered material comprised of:

)ase layer of aluminum or aluminum alloy; and

iuplex layer comprised of:

intermediate layer consisting essentially of a non-porous barrier e aluminum oxide attached to said base layer having a density of 2.8 to :, being greater than 95 wt. % aluminum oxide, having a thickness in of 100 to 5000Angstrom and ...

LEVEL 1 - 71 OF 225 PATENTS

5,116,692

<=2> GET 1st DRAWING SHEET OF 2

May 26, 1992

Multi-layer type sliding bearing of aluminum alloy and method of producing the same

Aug. 25, 1992

Method of preparing urethane foam articles

INVENTOR: Yoshimura, Kimio, Urawa, Japan
Narumi, Satoshi, Tokyo, Japan

What is claimed is:

[*1] 1. A method of preparing a urethane foam article having a high density outer surface layer, of the type wherein a plastic liquid containing isocyanates, polyols, a catalyst, a blowing agent, an assistant and other additives is poured into a mold through a one-shot molding process while maintaining the ...

... [*4] 1-substituted imidazole compound, 1,8-diazabicyclo(5,4,0)-7-undecene and an organic acid salt thereof.

[*5] 5. A method of preparing a urethane foam article having a high density outer surface layer, of the type wherein a plastic liquid containing isocyanates, polyols, a catalyst, a blowing agent, an assistant and other additives is poured into a mold through a one-shot molding process while maintaining the ...

LEVEL 1 - 68 OF 225 PATENTS

5,132,132

<=2> GET 1st DRAWING SHEET OF 3

Jul. 21, 1992

Coating method for magnetic recording medium

INVENTOR: Watanabe, Masaru, Nishinomiya, Japan
Hirose, Satoshi, Amagasaki, Japan

... [*1] as to form a lower layer on said support continuously travelling and then coating on said lower layer a second magnetic coating solution so as to form an upper layer thereon to thereby produce a two-layer type magnetic recording medium, said method comprising the steps of coating said first magnetic coating solution on said support by a first die including first and second lip portions which are in ...

LEVEL 1 - 69 OF 225 PATENTS

5,128,229

<=2> GET 1st DRAWING SHEET OF 2

Jul. 7, 1992

Electrophotosensitive material and method of manufacturing the same

Nitowski,
Martin, E

... [*
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layer, th

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(a) a

(b) a

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layer typ

(ii) a
phosphoru
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[*10]

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layer typ
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the range

INVENTOR: Mori, Sanae, Nagoya, Japan
Sakamoto, Masaaki, Nagoya, Japan
Ishikawa, Hideo, Komaki, Japan
Nagai, Yoji, Nagoya, Japan

What is claimed is:

[*1] 1. In a multi-layer type sliding bearing of aluminum alloy, having a backing layer of steel, a bearing layer of aluminum alloy bonded to the backing layer, and an overlay layer, the improvement further comprising a mixture layer of a ...

... [*1] layer and one element selected from the group consisting of Ni, Co and Fe, said overlay consisting by weight of 0 to 15% Cu, 0 to 20% Sb, and the balance- Sn and incidental impurities.

[*2] 2. A multi-layer type sliding bearing of aluminum alloy, having a backing layer of steel provided on one side thereof with a rear face-plating layer provided on rear face thereof, a bearing layer of aluminum alloy bonded to ...

... [*2] overlay and one element selected from the group consisting of Ni, Co and Fe, said overlay consisting by weight of 0 to 15% Cu, 0 to 20% Sb, and the balance Sn and incidental impurities.

[*3] 3. A multi-layer type sliding bearing of aluminum alloy as claimed in claim 2, wherein the rear face-plating layer consists of the same constituents as the overlay, the thickness of the rear face-plating layer being in a range of 0.1 to 5 microns.

[*4] 4. In a method of producing a multi-layer type sliding bearing of aluminum alloy, comprising the steps of: providing a half cylindrical or cylindrical bearing member made of an aluminum alloy, said bearing member being bonded onto a backing layer of steel; and ...

... [*4] said mixture layer being constituted by a mixture of the constituents of said overlay and one element selected from the group consisting of Ni, Co and Fe.

[*5] 5. A method of producing a multi-layer type sliding bearing of aluminum alloy claimed in claim 4, wherein said step of electrolytically providing said overlay layer on said inner face of said bearing member further includes the step of electrolytically ...

LEVEL 1 - 72 OF 225 PATENTS

5,103,329

<=2> GET 1st DRAWING SHEET OF 8

Apr. 7, 1992

Surface stabilized ferroelectric liquid crystal switching using proximity effects

INVENTOR: Clark, Noel A., Boulder, Colorado
Handschy, Mark, Boulder, Colorado

... [*14] third electrode means, said first and second domain wall forming a data value.

[*15] 15. The apparatus as recited in claim 1, wherein said liquid crystal film is a tilted layer type.

[*16] 16. An apparatus as in claim 1, wherein said electrode gap is spanned by a resistive layer.

PAGE 80

LEVEL 1 - 73 OF 225 PATENTS

5,087,544

Feb. 11, 1992

Perylene electrophotosensitive material with m-phenylenediamine

INVENTOR: Muto, Nariaki, Daito, Japan
Kakui, Mikio, Mino, Japan
Sumida, Keisuke, Hirakata, Japan
Nakazawa, Toru, Osaka, Japan
Matsumoto, Kazuo, Hirakata, Japan

What is claimed is:

[*1] 1. An electrophotosensitive material comprising a conductive substrate and a single layer type photosensitive layer provided on said conductive substrate, said photosensitive layer containing a m-phenylenediamine compound as charge-transferring material and a perylene compound as charge-generating material, ...

PAGE 81

LEVEL 1 - 74 OF 225 PATENTS

5,081,513

<=2> GET 1st DRAWING SHEET OF 5

Jan. 14, 1992

Electronic device with recovery layer proximate to active layer

INVENTOR: Jackson, Warren B., San Francisco, California
Hack, Michael, Mountain View, California

... [*9] dopant concentration of each of said dopant types in said recovery layer is capable of providing substantially the same number of carriers of said

opposite sign to said channel carriers as does a doped layer of that type having a concentration in the range of 1.5 x 10<18 > to 4.5 x 10<18 > atoms per cm<3> .

[*10] 10. An electronic device including a substantially intrinsic non-single ...

LEVEL 1 - 75 OF 225 PATENTS

5,059,502

<=2> GET 1st DRAWING SHEET OF 3

Oct. 22, 1991

Electrophotographic photoconductor

INVENTOR: Kojima, Narihito, Numazu, Japan
Nagame, Hiroshi, Numazu, Japan
Seto, Mitsuru, Yamakita, Japan
Yamazaki, Shunpei, Atsugi, Japan
Hayashi, Shigenori, Atsugi, Japan
Ishida, Noriya, Atsugi, Japan
Hirose, Naoki, Atsugi, Japan
Sasaki, Mari, Atsugi, Japan
Takeyama, Junichi, Atsugi, Japan

... [*16] 1, wherein the Vickers hardness of said organic photoconductive layer is 10 to 50 Kg/mm<2> .

[*17] 17. The electrophotographic photoconductor as claimed in claim 1, wherein organic photoconductive layer is a single-layer-type photoconductive layer.

[*18] 18. The electrophotographic photoconductor as claimed in claim 17, wherein the thickness of said single-layer-type photoconductive layer is 5 to 30 mu m.

[*19] 19. The electrophotographic photoconductor as claimed in claim 1, wherein organic photoconductive layer is a function-separated-type photoconductive layer comprising a ...

LEVEL 1 - 76 OF 225 PATENTS

5,054,134

<=2> GET 1st DRAWING SHEET OF 5

Oct. 8, 1991

Upper layer water flow type circulating water pool

INVENTOR: Teratsuji, Osamu, Ichikawa, Japan
Nishimura, Keiichi, Urawa, Japan

Moriya, Yoshiro, Matsudo, Japan
Ueda, Yukihiko, Yokohama, Japan

What is claimed is:

[*1] 1. An upper water flow layer type circulating water pool comprising a circulating pool main body with front and rear curved portions; a swimming tank or pool defined by an opening in an upper portion of said circulating ...
PAGE 84

LEVEL 1 - 77 OF 225 PATENTS

5,051,126

<=2> GET 1st DRAWING SHEET OF 1

Sep. 24, 1991

Cermet for tool

INVENTOR: Yasui, Hajime, Nagoya, Japan
Suzuki, Junichiro, Hashima, Japan

... [*1] layer is composed of more transitional metals selected from the group consisting of the group IVb metals than the core, and the core is composed of more transitional metals selected from the group consisting of the group Vb metals and tungsten than any outer layer of the Type-II particles.

[*2] 2. The cermet of claim 1, wherein the ratio of transitional metals in group IVb, transitional metals in group Vb, and tungsten to carbon and nitrogen is 1.0:0.85-1.0.

[*3] 3. The cermet of claim ...
PAGE 85

LEVEL 1 - 78 OF 225 PATENTS

5,050,323

<=2> GET 1st DRAWING SHEET OF 2

Sep. 24, 1991

Badge

INVENTOR: Gagnon, Raymond, Montreal, Canada

... [*1] front face of said body layer, and

fastening means carried by the back face of said body layer to attach said body layer to a wearer's clothing; wherein:

the foam material forming the body layer is of the type having no memory when compressed;

said foam material is left exposed at the peripheral edge of said body layer; and,

said badge further comprises a protecting transparent film covering said image-bearing ...

... [*9] front face of said body layer; and,

fastening means carried by the back face of said body layer to attach said body layer to a wearer's clothing; wherein:

the expanded polystyrene forming the body layer is of the type having no memory when compressed;

said expanded polystyrene is left exposed at the peripheral edge of said body layer; and,

said badge further comprises a protecting transparent film covering said image-bearing ...

... [*10] front face of said body layer; and,

fastening means carried by the back face of said body layer to attach said body layer to a wearer's clothing, wherein;

the expanded polystyrene forming the body layer is of the type having no memory when compressed;

said expanded polystyrene is left exposed at the peripheral edge of said body layer; and,

said badge further comprises a protecting transparent film covering said image-bearing ...

LEVEL 1 - 79 OF 225 PATENTS

5,039,627

<=2> GET 1st DRAWING SHEET OF 7

Aug. 13, 1991

Method of producing a quasi-flat semiconductor device capable of a multi-wavelength laser effect and the corresponding device

INVENTOR: Menigaux, Louis, Bures sur Yvette, France
Dugrand, Louis, Chelles, France

... [*4] least one material selected from the group consisting of aluminum, gallium and indium and at least one material selected from the group consisting of phosphorous, arsenic and antimony.

[*5] 5. A method according to claim 4, wherein the active layers are of type N, and comprise Ga 1 - x Al x As, x differing each time, and being less than approximately 10%, while the confining layers comprise Ga 1 - y Al y ...

... [*9] about one-tenth of a micron.

[*10] 10. A method according to claim 1, wherein the upper layer is a group III-V alloy.

[*11] 11. A method according to claim 5, wherein the upper layer is type P gallium arsenide.

[*12] 12. A method according to claim 1, wherein said levelling comprises an erosion operation applied to the upper surface of the block, laying bare at least over the major part of the eroded ...

... [*30] least one material selected from the group consisting of aluminum, gallium and indium and at least one material selected from the group consisting of phosphorous, arsenic and antimony.

[*31] 31. A method according to claim 30, wherein the active layers are of type N, and comprises Ga 1 - x Al x As, x differing each time and being less than approximately 10%, while the confinement layers comprise Ga 1 - y Al y ...

PAGE 87

LEVEL 1 - 80 OF 225 PATENTS

5,037,505

<=2> GET 1st DRAWING SHEET OF 2

Aug. 6, 1991

Construction process for a self-aligned transistor

INVENTOR: Tung, Pham N., Paris, France

... [*2] mask,

i) dissolving the two silica masks in a solution of HF + NH4F + H2O.

[*3] 3. Process of constructing a self-aligned transistor, according to claim 1, from a substrate comprising layers of type N and N< + > formed by epitaxy, further comprising the steps of:

a) depositing and masking by a first resin mask creating a resin pattern of dimensions corresponding to the power of resolution of said ...

PAGE 88

LEVEL 1 - 81 OF 225 PATENTS

5,031,025

<=2> GET 1st DRAWING SHEET OF 3

Jul. 9, 1991

Hermetic single chip integrated circuit package

INVENTOR: Braun, Robert E., Norristown, Pennsylvania
Gibbs, Ronald T., King of Prussia, Pennsylvania

... [*1] said rim of said lid being sealed to said substrate, thereby forming an hermetic package.

[*2] 2. An hermetic integrated circuit package as defined in claim 1 wherein said wiring substrate is of the multi-layer type, said lead terminals being coupled to said input/output terminals.

[*3] 3. An hermetic integrated circuit package as defined in claim 2 wherein said rim of said lid is comprised of a ...

LEVEL 1 - 82 OF 225 PATENTS

5,028,786

<=2> GET 1st DRAWING SHEET OF 4

Jul. 2, 1991

Array for a nuclear radiation and particle detector

INVENTOR: Da Silva, Angela J., Vancouver, Canada
Le Gros, Mark A., Vancouver, Canada
Turrell, Brian G., Vancouver, Canada
Kotlicki, Andrzej, Warsaw, Maryland, Poland
Drukier, Andrzej K., Greenbelt, Maryland

... [*13] detector as defined in claim 8 wherein said each array is a planar array.

[*14] 14. A method of making a detector array comprising depositing a substantially continuous film layer of type I superconducting material on a substrate removing a portion of said film to leave a plurality of discrete pixels each of a predetermined size of said type I superconducting material arranged ...

LEVEL 1 - 83 OF 225 PATENTS

5,028,505

Jul. 2, 1991

Electrophotographic photoreceptor

INVENTOR: Akasaki, Yutaka, Kanagawa, Japan
Nukada, Katsumi, Kanagawa, Japan
Sato, Katsuhiro, Kanagawa, Japan

... [*9] comprising a compound of formula (I), (II), or (III) as set forth in claim 1.

[*10] 10. The electrophotographic photoreceptor as claimed in claim 1, wherein the photosensitive layer is of a single layer type.

LEVEL 1 - 84 OF 225 PATENTS

5,024,913

Jun. 18, 1991

Electrophotographic photosensitive material

INVENTOR: Yoshida, Takeshi, Kawachinagano, Japan
Nakatani, Kaname, Osaka, Japan
Fukami, Toshiyuki, Sakai, Japan
Tanaka, Nariaki, Kishiwada, Japan

... [*6] photosensitive layer.

[*7] 7. The electrophotographic photosensitive material of claim 6, wherein the surface protective layer is 2 to 5 microns thick.

[*8] 8. The electrophotographic photosensitive material of claim 1, wherein the photosensitive layer is of a single layer type.

[*9] 9. The electrophotographic photosensitive material of claim 8, wherein the photosensitive layer is 10 to 50 microns thick.

[*10] 10. The electrophotographic photosensitive material of claim 8, wherein the photosensitive layer is 15 to 25 microns thick.

[*11] 11. The ...

LEVEL 1 - 85 OF 225 PATENTS

5,022,441

<=2> GET 1st DRAWING SHEET OF 67

Jun. 11, 1991

Papermaker's double layer fabric with high warp and weft volume per repeat

INVENTOR: Tate, Takuo, Hachiouji, Japan
Watanabe, Taketoshi, Inagi, Japan
Nagura, Hiroyuki, Inagi, Japan

What is claimed is:

[*1] 1. A papermakers' double layer type fabric comprising in one repeat a warp layer, said warp layer having an upper surface and a lower surface, said warp layer consisting of n x 2 of warps wherein n is an ...

... [*1] being each interlaced once in one repeat with a warp, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*2] 2. A papermakers' double layer type fabric comprising in one repeat a warp layer, said warp layer having an upper surface and a lower surface, said warp layer consisting of n x 2 of warps wherein n is an ...

... [*2] between which said non-interlacing warp is located to form a knuckle so that the knuckles so formed on each of the adjacent lower surface wefts are arranged in a staggered relation.

[*3] 3. A papermakers' double layer type fabric according to claim 2, wherein a non-interlacing warp sandwiched in between a pair of warps interlacing with a lower surface polymeric weft, interlaces with an upper surface weft at a position where said pair of warps interlace with the lower surface polymeric weft.

[*4] 4. A papermakers' double layer type fabric according to claim 2, wherein in said n x 2 of warps, a non-interlacing warp and a warp interlacing with a lower surface polymeric weft, are alternately arranged.

[*5] 5. A papermakers' double layer type fabric according to claim 2, wherein in said n x 2 of warps, a non-interlacing warp and a plurality of warps interlacing with a lower surface polymeric weft, are alternately arranged.

[*6] 6. A papermakers' double layer type fabric according to claim 2, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*7] 7. A papermakers' double layer type fabric comprising in one repeat a warp layer, said warp layer having an upper surface and a lower surface, said warp layer consisting of n x 2 of warps, wherein n is an ...

... [*7] each interlaced once in one repeat with a warp and the lower surface polyester wefts being each interlaced twice in one repeat with a warp.

[*8] 8. A papermakers' double layer type fabric according to claim 7, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*9] 9. A papermakers' double layer type fabric according to claim 7, wherein the number of said lower surface polyamide wefts and that of said lower surface polyester wefts are in a ratio of from 1:3 to 3:1.

[*10] 10. A papermakers' double layer type fabric according to claim 7, wherein both said lower surface polyamide wefts and lower surface polyester wefts are each interlaced with two adjacent warps.

[*11] 11. A papermakers' double layer type fabric according to claim 10, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*12] 12. A papermakers' double layer type fabric according to claim 10, wherein the number of said lower surface polyamide wefts and that of said lower surface polyester wefts are in a ratio of from 1:3 to 3:1.

[*13] 13. A papermakers' double layer type fabric according to claim 7, wherein said lower surface polyester wefts are each interlaced twice in one repeat with a warp, and said lower surface polyamide wefts are each interlaced once ...

... [*13] pair of adjacent warps between which a warp interlacing with an upper surface weft at a position where said pair of warps interlace with the lower surface polyamide weft, is disposed.

[*14] 14. A papermakers' double layer type fabric according to claim 13, wherein a non-interlacing warp is arranged adjacent to a warp interlacing with said lower surface polyester weft.

[*15] 15. A papermakers' double layer type fabric according to claim 13, wherein at least one of a pair of warps which interlace with said lower surface polyamide weft also interlaces with the lower surface polyester weft.

[*16] 16. A papermakers' double layer type fabric according to claim 13, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*17] 17. A papermakers' double layer type fabric according to claim 13, wherein the number of said lower surface polyamide wefts and that of said lower surface polyester wefts are in a ratio of 1:3 to 3:1.

[*18] 18. A papermakers' double layer type fabric according to claim 13, wherein said lower surface polyamide wefts are each interlaced once in one repeat with a pair of adjacent warps between which a warp interlacing with an upper surface ...

... [*18] polyester wefts are each interlaced twice in one repeat with a warp located between a pair of warps interlacing with a lower surface polyamide weft.

[*19] 19. A papermakers' double layer type fabric according to claim 18, wherein said lower surface polyamide wefts are of larger diameter than said lower surface polyester wefts.

[*20] 20. A papermakers' double layer type fabric according to claim 18, wherein the number of said lower surface polyamide wefts and that of said lower surface polyester wefts are in a ratio of from 1:3 to 3:1.

LEVEL 1 - 86 OF 225 PATENTS

5,005,057

<=2> GET 1st DRAWING SHEET OF 19

Apr. 2, 1991

Semiconductor light-emitting diode and method of manufacturing the same

INVENTOR: Izumiya, Toshihide, Tokyo, Japan
Ohba, Yasuo, Yokohama, Japan
Hatano, Ako, Tokyo, Japan

... [*7] conductivity type having a zinc blend type crystal structure.

[*8] 8. A diode according to claim 3 or 7, wherein said light-reflection layer has a multilayered structure in which said superlattice layers of the types are alternately stacked with a period which is substantially equal to the light-emitting wavelength.

[*9] 9. A semiconductor light-emitting diode including a light-emitting layer having a p-n junction, comprising:

...

LEVEL 1 - 87 OF 225 PATENTS

4,996,108

<=2> GET 1st DRAWING SHEET OF 9

Feb. 26, 1991

Sheets of transition metal dichalcogenides

INVENTOR: Divigalpitiya, W. M. Ranjith, Vancouver, Canada
Frindt, Robert F., Vancouver, Canada
Morrison, S. Roy, Burnaby, Canada

What is claimed is:

[*1] 1. A process for forming sheet-like compositions of the formula:

MX2:Y

wherein MX2 is a layer-type transition metal dichalcogenide, M is a metal selected from the group consisting of niobium, tantalum, molybdenum and

tungsten, X is a chalcogen selected from the group consisting of sulfur and selenium and Y is a material located ...

... [*18] A method of coating an object, comprising:

forming a sheet-like composition at an interface between water and a non-metallic liquid which is immiscible with water, the composition having the formula:

MX2:Y

wherein MX2 is a layer-type transition metal dichalcogenide, the M is selected from the group consisting of niobium, tantalum, molybdenum and tungsten; X is selected from the group consisting of sulfur and selenium, and Y is a material located between layers of MX2; and

bringing the ...

... [*18] spread over the object.

[*19] 19. A method as claimed in claim 18, wherein the MX2 is crystalline with c-axes perpendicular to the substrate.

[*20] 20. A composition having the formula:

MX2:Y

wherein MX2 is a layer-type transition metal dichalcogenide selected from the group consisting of molybdenum disulfide and tungsten disulfide; and Y is an

organic material located between layers of MX2.

[*21] 21. A composition as claimed in claim 20, wherein the ...

... [*24] tetrachloride; dimethoxy benzene; 1-chloronaphthalene; chrysene; stearamide; phthalocyanine; copper phthalocyanine and iron pentacarbonyl.

[*25] 25. A object having a surface coated with a composition having the formula:

MX2:Y

wherein MX2 is a layer-type transition metal dichalcogenide, M is a metal selected from the group consisting of niobium, tantalum, molybdenum and tungsten, X is a chalcogen selected from the group consisting of sulfur and selenium, and Y is an organic substance located ...

LEVEL 1 - 88 OF 225 PATENTS

4,980,313

<=2> GET 1st DRAWING SHEET OF 2

Dec. 25, 1990

Method of producing a semiconductor laser

INVENTOR: Takahashi, Shogo, Itami, Japan

What is claimed is:

[*1] 1. A method of producing a semiconductor laser comprising:

growing at least a p type lower cladding layer, a quantum well active layer, and an type upper cladding layer successively on a substrate;

depositing a first film as a source for diffusion of n type impurities on a portion of the n type upper cladding layer;

... PAGE 99

LEVEL 1 - 89 OF 225 PATENTS

4,980,216

<=2> GET 1st DRAWING SHEET OF 2

Dec. 25, 1990

Transfer for textiles

INVENTOR: Rompp, Walter, Rosenstrasse 46, D-7406 Mossingen, Federal Republic of Germany

... [*10] freely cross-linkable silicon emulsion.

[*11] 11. A transfer according to claim 10, wherein said separating layer is a polysiloxane compound.

[*12] 12. A transfer according to claim 1, wherein said separating layer is of the type C1G 2 pure.

[*13] 13. A transfer according to claim 1, wherein said separating layer is screen-printable.

[*14] 14. A transfer according to claim 1, wherein said separating layer is manufactured on a ... PAGE 100

LEVEL 1 - 90 OF 225 PATENTS

4,976,990

Dec. 11, 1990

Process for metallizing non-conductive substrates

INVENTOR: Bach, Wolf, Southbury, Connecticut
Ferrier, Donald R., Thomaston, Connecticut
Kukanskis, Peter E., Woodbury, Connecticut
Williams, Ann S., Southbury, Connecticut
Senechal, Mary J., Canton, Connecticut

... [*3] electroless depositing solution to deposit metal fully and adherently and essentially void-free onto said catalyzed through-hole surfaces.

[*4] 4. In a process for manufacturing printed circuit boards of the multi-layer type, in which a planar composite substrate material is provided comprised of a laminate of alternating parallel layers of metal and non-conductive, glass-reinforced thermosetting or thermoplastic material, and in which through-holes are provided ...

... [*4] metal depositing solution to deposit metal fully and adherently and essentially void-free onto said catalyzed through-hole surfaces.

[*5] 5. In a process for manufacturing printed circuit boards of the multi-layer type, in which a planar composite substrate material is provided comprised of a laminate of alternating parallel layers of metal and non-conductive, glass-reinforced thermosetting or thermoplastic material, and in which through-holes are provided ...

... [*11] time of said process for metallizing said through-hole surfaces.

[*12] 12. A process for providing metallized through-holes in a printed circuit board of the double-sided or multi-layer type, comprising the steps of:

(a) providing a printed circuit substrate material comprised of a member selected from the group consisting of (1) a planar non-conductive material comprised of glass-reinforced thermosetting or ...

... [*12] metal depositing solution to deposit metal fully and adherently and essentially void-free onto said catalyzed through-hole surfaces.

[*13] 13. The process according to claim 12 wherein said printed circuit board is of the multi-layer type and wherein said through-hole surfaces are desmeared between steps (b) and (c).

[*14] 14. A process for providing a full-coverage, essentially void-free, adherent metal layer on the surface of a ...

LEVEL 1 - 91 OF 225 PATENTS

4,963,450

Oct. 16, 1990

Electrophotographic photosensitive member with disazo pigment

INVENTOR: Miyazaki, Hajime, Yokohama, Japan
Go, Shintetsu, Yokohama, Japan
Senoo, Akihiro, Yokohama, Japan
Iuchi, Kazushi, Yokohama, Japan
Kanemaru, Tetsuro, Tokyo, Japan

What is claimed is:

[*1] 1. A laminated layer type electrophotographic photosensitive member having a charge generation layer and a charge transport layer on an electroconductive support, characterized in that the charge generation layer has at least one of disazo pigments [is by] of the formulae (1) and (...
PAGE 102

LEVEL 1 - 92 OF 225 PATENTS

4,941,737

<=2> GET 1st DRAWING SHEET OF 5

Jul. 17, 1990

Liquid-crystal display device using twisted nematic liquid crystal molecules

INVENTOR: Kimura, Naofumi, Nara, Japan

What is claimed is:

[*1] 1. A liquid-crystal display device comprising:

a multi-layer-type liquid-crystal cell that is composed of at least first and second cell layers, said cell layers containing liquid-crystal molecules with a twisted nematic orientation therein;

said first cell layer having an angle of ...
PAGE 103

LEVEL 1 - 93 OF 225 PATENTS

4,932,788

<=2> GET 1st DRAWING SHEET OF 4

Jun. 12, 1990

Monitoring of the quality of a flowing vapor

INVENTOR: Yeh, George C., 2 Smedley Dr., Newtown Square, Pennsylvania 19073

... [*5] 1 wherein said flowmeter is a mass flowmeter capable of directly metering the mass flow rate of the vaporized sample.

[*6] 6. A system according to claim 5 wherein said mass flowmeter is of an electrothermal boundary-layer type flowmeter in which temperature sensing and

heating elements are placed outside the pipe carrying said stream of sample vapor and do not obstruct the stream.

[*7] 7. A system according to claim 1 wherein said means ...

... [*16] said heater means further comprises:

a thermal insulator completely covering said shell and the inlet and outlet thereof.

[*17] 17. Apparatus according to claim 11 wherein said mass flowmeter means is of the electrothermal boundary-layer type for permitting unobstructed flow.

[*18] 18. Apparatus according to claim 11 wherein said second sensing means comprises:

thermistors formed into thin bands and placed around the inlet and outlet of said heater means.

[*19] ...

PAGE 104

LEVEL 1 - 94 OF 225 PATENTS

4,888,261

<=2> GET 1st DRAWING SHEET OF 5

Dec. 19, 1989

Electrophotographic photosensitive member

INVENTOR: Mabuchi, Minoru, Tokyo, Japan

... [*6] electrophotographic photosensitive member of claim 1, wherein said charge transport layer is laminated on said charge generation layer.

[*7] 7. The electrophotographic photosensitive member of claim 1, wherein said photosensitive layer has a single layer type that the charge-generating material and the charge-transporting material are contained in the same layer.

PAGE 105

LEVEL 1 - 95 OF 225 PATENTS

4,886,721

<=2> GET 1st DRAWING SHEET OF 10

Dec. 12, 1989

Electrophotographic plate by use of metal naphthalocyanine derivative

INVENTOR: Hayashida, Shigeru, Hitachi, Japan
Tai, Seiji, Hitachi, Japan

Hayashi, Nobuyuki, Hitachi, Japan
Iwakabe, Yasushi, Hitachi, Japan
Kinjo, Noriyuki, Hitachi, Japan
Numata, Shunichi, Hitachi, Japan

... [*3] germaniumnaphthalocyanine,

bis(tripropylsiloxy)germaniumnaphthalocyanine,

bis(tributylsiloxy)germaniumnaphthalocyanine,

bis(triphenylsiloxy)germaniumnaphthalocyanine and

bis(triethylsiloxy)tinnaphthalocyanine.

[*4] 4. The electrophotographic plate according to claim 1, wherein said photoconductive layer is a complex double layer type comprising a charge generation layer containing said metal naphthalocyanine derivative which is a charge generation substance, and said charge transport layer containing a charge transport substance.

[*5] 5. The electrophotographic ...

LEVEL 1 - 96 OF 225 PATENTS

4,877,702

Oct. 31, 1989

Electrophotographic sensitive material

INVENTOR: Miyamoto, Eiichi, Osaka, Japan
Mutou, Nariaki, Daito, Japan
Nakazawa, Tooru, Osaka, Japan

What is claimed is:

[*1] 1. An electrophotographic sensitive material provided with a single-layer type sensitive layer containing an electric charge generating substance, an electric charge transferring substance, and a binding resin, characterized in that said electric charge generating substance is a perylene type compound ...

LEVEL 1 - 97 OF 225 PATENTS

4,867,827

Sep. 19, 1989

Process for gold foil stamping in relief

INVENTOR: Lesieur, Frederic, 25, Rue Pradier, Paris, France 75019

I claim:

[*1] 1. A method of gilding raised images formed by a thermographic process on a substrate with a marking layer of the type releasably disposed on a backing film comprising the steps of:

providing a thermally activated adhesive powder of the type that exhibits adhesive properties while in a solidified state;

printing a selected ...

... [*9] percentage basis, of 65% styrene oleophthalic resin; 15% to 20% acrylic resin; 10% to 15% plasticizer; 5% to 10% microcrystalline wax.

[*10] 10. A method of gilding a substrate with a marking layer of the type releasably disposed on a backing film, comprising the steps of:

providing a thermally activated adhesive powder of the type that will liquefy under a sufficient amount of heat and will exhibit adhesive properties when ...

LEVEL 1 - 98 OF 225 PATENTS

4,852,693

<=2> GET 1st DRAWING SHEET OF 2

Aug. 1, 1989

Lubrication monitoring apparatus for machine

INVENTOR: Nakajima, Yoshiaki, Yono, Japan
Suzuki, Tadashi, Machida, Japan
Wada, Yoneji, Urawa, Japan

... [*4] a separate pump and supplied to said lubricated mechanical section.

[*5] 5. A lubrication monitoring apparatus for a machine as claimed in claim 1, wherein said filter is a deep-layer type filter.

[*6] 6. A lubrication monitoring apparatus for a machine as claimed in claim 1, wherein said warning device is connected with a recorder to make a recording when difference in ...

LEVEL 1 - 99 OF 225 PATENTS

4,822,590

<=2> GET 1st DRAWING SHEET OF 3

Apr. 18, 1989

Forms of transition metal dichalcogenides

INVENTOR: Morrison, S. Roy, Burnaby, Canada
Frindt, Robert F., Vancouver, Canada
Joensen, Per, Coquitlam, Canada
Gee, Michael A., Vancouver, Canada
[Miremadi, Bijan K., Coquitlam, Canada]

We claim:

[*1] 1. An exfoliation process for preparing a single layer substance of the form

MX 2

wherein MX2 is a layer type transition metal dichalcogenide selected from the group consisting of MoS2, TaS2, WS2, which comprises:

(a) intercalating multi-layer MX2 with an alkali metal in a dry environment for sufficient time to enable the ...

LEVEL 1 - 100 OF 225 PATENTS

4,800,568

<=2> GET 1st DRAWING SHEET OF 1

Jan. 24, 1989

Gas laser with a frequency-selective dielectric layer system

INVENTOR: Krueger, Hans, Munich, Federal Republic of Germany
Good, Hans P., Sargans, Switzerland

... [*1] said means being a frequency selective layer system being formed on the Brewster window, said system comprising:

a plurality of successive layers, said plurality of layers including only two layer types and including alternating high refractive index first layers and low refractive index second layers, each of said first layers having substantially a first optical thickness and each of said second layers having ...

... [*9] opposite ends through which laser radiation is emitted, an improved frequency selective layer system comprising:

a plurality of successive layers on said Brewster window, said plurality of layers including only two layer types and including alternating high refractive index first layers and low refractive index second layers, each of said first layers having substantially a thickness of 71.2 nm and each of said second layers having ...

LEVEL 1 - 101 OF 225 PATENTS

4,790,954

Dec. 13, 1988

Mixed metal hydroxide-clay adducts as thickeners for water and other hydrophylic fluids

INVENTOR: Burba, III, John L., Angleton, Texas
Barnes, Audrey L., Lake Jackson, Texas

... [*16] saconite, vermiculite, chlorite, attapulgite, sepiolite, palygorskite, and Fullers's earth.

[*17] 17. The method of claim 1 wherein the mineral clay is at least one of the group consisting of amorphous clays of the allophane group and crystalline clays of the 2-layer type, 3-layer type, expanding type, non-expanding type, elongate type, regular mixed layer type, and chain structure type.

[*18] 18. The method of claim 1 wherein the mineral clay is bentonite.

[*19] 19. The method of claim 1 wherein the mineral clay is beneficiated bentonite.

[*20] 20. The method of claim 1 wherein the weight ratio of monolayered ...

LEVEL 1 - 102 OF 225 PATENTS

4,775,814

<=2> GET 1st DRAWING SHEET OF 3

Oct. 4, 1988

Saw device

INVENTOR: Yuhara, Akitsuna, Kawasaki, Japan
Sasaki, Jun, Sagamihara, Japan
Hirashima, Tetsuya, Yokohama, Japan
Yamada, Jun, Yokohama, Japan

... [*16] substrate and sets of finger electrodes disposed on said substrate, at least one set of said electrodes having a laminated structure made up of a plurality of layers including at least one of a first layer type of an aluminum film and at least one of a second layer type of an aluminum film which includes an impurity selected from the group consisting of titanium, chromium, vanadium and manganese.

[*17] 17. A SAW device according to claim 16, wherein said laminated structure includes a first layer of said first layer type formed on said substrate and a second layer of said second layer type formed on said first layer, the thickness of said first layer being greater than the thickness of said second layer.

[*18] 18. A SAW device according to claim 16, wherein said laminated structure includes a first layer of said second layer type formed on said substrate and a second layer of said first layer type formed on said first layer, the thickness of said second layer being greater than the thickness of said first layer.

[*19] 19. A SAW device according to claim 16, wherein said laminated structure includes a first layer of said first layer type formed on said substrate, a second layer of said second layer type formed on said first layer, and a third layer of said first layer type formed on said second layer, the combined thickness of said first and third layers being greater than the thickness of said second layer.

[*20] 20. A SAW device according to claim 16, wherein said laminated structure includes a first layer of said second layer type formed on said substrate, a second layer of said first layer type formed on said first layer, and a third layer of said second layer type formed on said second layer, the thickness of said second layer being greater than the combined thickness of said first and third layers.

[*21] 21. A SAW device according to claim 16, wherein said laminated structure includes a first layer of said first layer type formed on said substrate, a second layer of said second layer type formed on said first layer, a third layer of said first layer type formed on said second layer, and a fourth layer of said second layer type formed on said third layer, the combined thickness of said first and third layers being greater than the combined thickness of said second and fourth layers.

Pat. No. 4775814, *21

PAGE 113

[*22] 22. A SAW device according to claim 17, wherein said first layer type includes an impurity selected from the group consisting of titanium, copper, magnesium, zinc and nickel.

[*23] 23. A SAW device according to claim 22, wherein said first layer includes first and second sublayers having different ...

PAGE 1

LEVEL 1 - 103 OF 225 PATENTS

4,773,074

<=2> GET 1st DRAWING SHEET OF 2

Sep. 20, 1988

Dual mode laser/detector diode for optical fiber transmission lines

INVENTOR: Hunsperger, Robert G., Newark, Delaware
Park, Jung H., Newark, Delaware

... [*12] conductivity type of the active layer, the waveguide layer having first and second surfaces, the first surface in contact with the second surface of the active layer;

a confining layer having a conductivity layer opposite the active layer type and having a surface in contact with the second surface of the waveguide layer;

cap and substrate layers; and

means to couple the cell and optical and electrical circuits.

P

AGE 115

LEVEL 1 - 104 OF 225 PATENTS

4,761,242

<=2> GET 1st DRAWING SHEET OF 2

Aug. 2, 1988

Piezoelectric ceramic composition

INVENTOR: Suzuki, Kazunori, Nagoya, Japan
Naitoh, Masataka, Kariya, Japan

... [*14] constant-temperature characteristic, said additive being selected from the group consisting of 10-55 mol % CaTiO3 and 1-15 mol % SrTiO3, and

the balance of the composition being PbBi4Ti4O15 having a Bi-layer type structure which PbBi4Ti4O15 has a positive dielectric constant-temperature characteristic,

a change in the dielectric constant of the PbBi4Ti4O15 which change occurs by a change in temperature being substantially compensated for ...

PAGE

116

LEVEL 1 - 105 OF 225 PATENTS

4,753,187

<=2> GET 1st DRAWING SHEET OF 4

Jun. 28, 1988

Individual submarine diving equipment

INVENTOR: Galimand, Patrice, Paris, France

... [*10] tightness and passage of electric connection between the container and the motor are provided.

[*11] 11. The device of claim 1, comprising a control for the motor realized by a moulding-on of a contactor of the deformable thin layer type, said moulding-on having the form of a buckle portion completed by a strip having

pressure connecting means for connection around a hand of the diver, the buckle element being disposable around the diver's ...

LEVEL 1 - 106 OF 225 PATENTS

4,729,459

<=2> GET 1st DRAWING SHEET OF 9

Mar. 8, 1988

Adjustable damping force type shock absorber

INVENTOR: Inagaki, Mitsuo, Okazaki, Japan
Sasaya, Hideaki, Okazaki, Japan
Takeda, Kenji, Aichi, Japan
Nakano, Hiromichi, Okazaki, Japan
Kamiya, Sigeru, Aichi, Japan
Ishida, Toshinobu, Okazaki, Japan

... [*1] said plunger to that of said other end surface of said sliding member.

[*2] 2. An adjustable damping force type shock absorber according to claim 1, wherein said piezo-electric body is a lamination layer type piezo-electric body constituted by laminating in an axial direction a plurality of piezo-electric elements having a piezo-electric effect in which application of a stress in the axial direction ...

... [*4] piezo-electric body on the basis of the electric signal from the damping force sensor.

[*5] 5. An adjustable damping force type shock absorber according to claim 4, wherein said piezo-electric body is a lamination layer type piezo-electric body constituted by laminating a plurality of piezo-electric elements.

[*6] 6. An adjustable damping force type shock absorber according to claim 5, wherein said lamination layer type piezo-electric body comprises electrode plates inserted between adjacent piezo-electric elements and forming, respectively, a first electrode by connecting alternate electrode plates in parallel and a ...

LEVEL 1 - 107 OF 225 PATENTS

4,723,601

Feb. 9, 1988

Multi-layer type heat exchanger

INVENTOR: Ohara, Toshio, Kariya, Japan
Tsuchiya, Kiyomitsu, Okazaki, Japan
Kittaka, Kiyoshi, Aichi, Japan
Sudo, Yasuhiro, Okazaki, Japan

Yamauchi, Yoshiyuki, Aichi, Japan
Miyata, Yoshio, Nagoya, Japan

What is claimed is:

[*1] 1. A multi-layer type heat exchanger including:

a row of a plurality of substantially parallel flat tubes each formed by two core plates prepared by press work and sealingly jointed together;

each ...

... [*7] one outermost core plate to assure that said protecting plate is spaced from said one outermost core plate a distance sufficient to accommodate said further corrugated fin.

[*8] 8. A multi-layer type heat exchanger including:

a row of a plurality of substantially parallel flat tubes each formed by two core plates prepared by press work and sealingly jointed together;

each ...

LEVEL 1 - 108 OF 225 PATENTS

4,703,266

<=2> GET 1st DRAWING SHEET OF 4

Oct. 27, 1987

Gradient meter with thin magnetic layer

INVENTOR: Chiron, Guy, Gieres, France
Dumont, Andre , St. Egreve, France

... [*1] meter to measure the spatial derivatives

delta Hi/ delta j (i = x, y, z; j = x, y, z)

of a magnetic field H utilizing magnetic sonds with a thin layer of the type which comprises:

a magnetic layer of cylindrical form of revolution, the magnetic layer having an axis of difficult magnetization parallel to the axis of the cylinder and an axis of easy magnetization that is circular in a plane of the layer in a ...

LEVEL 1 - 109 OF 225 PATENTS

4,702,019

<=2> GET 1st DRAWING SHEET OF 7

Oct. 27, 1987

Apparatus for cooling high-temperature particles

INVENTOR: Tsuruno, Masayoshi, Funabashi, Japan
Horie, Michihiko, Nagareyama, Japan

... [*1] said guide tube and is vertically reciprocable so that displacement in the radially outward directions of said high-temperature particles along an outer surface of said conical or pyramidal body is facilitated, and a second packed layer type cooling zone disposed below said first cooling zone for gradually cooling said high-temperature particles while said high-temperature particles which have been rapidly cooled in said first ...

PAGE 121

LEVEL 1 - 110 OF 225 PATENTS

4,696,548

<=2> GET 1st DRAWING SHEET OF 7

Sep. 29, 1987

Antiglare mirror for an automobile

INVENTOR: Ueno, Yoshiki, Okazaki, Japan
Taguchi, Takasi, Anjo, Japan
Hattori, Tadashi, Okazaki, Japan

... [*1] selected thickness, so that light reflecting from said mirror and passing through said first dielectric layer has desired color characteristics.

[*2] 2. A mirror arrangement according to claim 1, wherein said liquid crystal layer is of the type whose transparency is reduced when an electric field is applied thereto compared to that when an electric field is not applied thereto.

[*3] 3. A mirror arrangement according to claim 1, further comprising: a second transparent dielectric layer located on the ...

PAGE 122

LEVEL 1 - 111 OF 225 PATENTS

4,686,159

<=2> GET 1st DRAWING SHEET OF 3

Aug. 11, 1987

Laminated layer type fuel cell

INVENTOR: Miyoshi, Hideaki, Kobe, Japan

What is claimed is:

[*1] 1. A laminated layer type fuel cell for converting electrochemical reaction of fuel and oxidizer into electric power, said fuel cell comprising a plurality of gas separation plates, each having rectilinear and zigzag portions of fuel and oxidizer ...

... [*1] electrolyte matrix, and an oxidizer electrode whereby partial pressures of reaction gases produced by the electrochemical reaction are equalized throughout the cell to equalize cell reactions and temperature distribution in the cell.

[*2] 2. A laminated layer type fuel cell as claimed in claim 1 wherein the rectilinear and zigzag portions of fuel and oxidizer channels have a length ratio of 1:1 and the zigzag portions are alternately disposed at upstream and downstream sides of the reaction gases.

[*3] 3. A laminated layer type fuel cell as claimed in claim 1 wherein the rectilinear and zigzag portions of fuel and oxidizer channels have a length ratio of 2:1 to 4:1 and the zigzag portions are sequentially displaced with respect to each channel.

LEVEL 1 - 112 OF 225 PATENTS

4,673,591

Jun. 16, 1987

Production of layer-type magnetic recording media

INVENTOR: Lehner, August, Roedersheim-Gronau, Federal Republic of Germany
Heil, Guenter, Ludwigshafen, Federal Republic of Germany
Lenz, Werner, Bad Durkheim, Federal Republic of Germany
Balz, Werner, Limburgerhof, Federal Republic of Germany
Kohl, Albert, Laumersheim, Federal Republic of Germany
Schornick, Gunnar, Neuleiningen, Federal Republic of Germany

We claim:

[*1] 1. A process for the production of a layer-type magnetic recording medium by dispersing a finely divided magnetically anisotropic material in a binder which consists of not less than 30% of a radiation-curable aqueous binder dispersion, applying the ...

LEVEL 1 - 113 OF 225 PATENTS

4,671,969

Jun. 9, 1987

Production of layer-type magnetic recording media

INVENTOR: Lehner, August, Roedersheim-Gronau, Federal Republic of Germany
Balz, Werner, Limburgerhof, Federal Republic of Germany
Lenz, Werner, Bad Durkheim, Federal Republic of Germany

Kohl, Albert, Laumersheim, Federal Republic of Germany
Heil, Guenter, Ludwigshafen, Federal Republic of Germany

We claim:

[*1] 1. A process for the production of a layer-type magnetic recording medium by dispersing a finely divided magnetically anisotropic material in a binder which consists of not less than 40% of a radiation-curable aqueous binder dispersion, applying the ...

LEVEL 1 - 114 OF 225 PATENTS

4,671,235

<=2> GET 1st DRAWING SHEET OF 2

Jun. 9, 1987

Tissue expander with self-contained injection reservoir and reinforcing insert

INVENTOR: Dubrul, William R., Santa Barbara, California
Heyler, III, Charles J., Thousand Oaks, California

... [*11] claim 10 wherein the plastic resin embedding the magnetically detectable material is further embedded in a silicone elastomer.

[*12] 12. A tissue expander device for surgical implantation beneath the skin and the subcutaneous layer of the type which is expanded after implantation by periodic injection of a liquid, such as saline into the expander device, the tissue expander comprising:

a thin expandable biocompatible cast silicone elastomer envelope forming an expandable ...

... [*16] tissue expander of claim 15 wherein the magnet in the injection reservoir is embedded in vapor barrier material.

[*17] 17. In a tissue expander used for surgical implantation beneath the skin and the subcutaneous layer of the type which is expanded after implantation by periodic injection of liquid into the expander device, the tissue expander having an expandable biocompatible envelope forming an expandable fluid-tight chamber configured to include an apex and an injection reservoir fully ...

... [*22] reservoir whereby location of the injection reservoir can be ascertained by external means for locating the magnet.

[*23] 23. In a tissue expander used for surgical implantation beneath the skin and the subcutaneous layer of the type which is expanded after implantation by periodic injection of a liquid into the expander device, the tissue expander having an expandable biocompatible envelope forming an expandable fluid-tight chamber configured to include an apex and an injection reservoir ...

LEVEL 1 - 115 OF 225 PATENTS

4,667,209

<=2> GET 1st DRAWING SHEET OF 3

May 19, 1987

Image recording apparatus

INVENTOR: Hakamada, Isao, Yokohama, Japan
Matsuoka, Kazuhiko, Yokohama, Japan

We claim:

[*1] 1. An image recording apparatus comprising:

a multi-layer type photosensitive medium; and

means for recording images by scanning said photosensitive medium with a laser beam, said means including a semiconductor laser which produces multimode oscillations, said laser ...

LEVEL 1 - 116 OF 225 PATENTS

4,664,857

May 12, 1987

Process for preparing a hydrogel

INVENTOR: Nambu, Masao, Yokohama, Japan

... [*1] a water-insoluble hydrogel having a water content of 20 to 92% by weight.

[*2] 2. A process according to claim 1, in which clay minerals of a laminated structure having a three-layer type (2:1 type) composite layer as a basic unit are suspended in said aqueous polyvinyl alcohol solution in an amount of not more than five times by weight the amount of said ...

LEVEL 1 - 117 OF 225 PATENTS

4,664,843

May 12, 1987

Mixed metal layered hydroxide-clay adducts as thickeners for water and other hydrophylic fluids

INVENTOR: Burba, III, John L., Angelton, Texas
Barnes, Audrey L., Lake Jackson, Texas

... [*16] vermiculite, chlorite, attapulgite, sepiolite, palygorskite, and Fuller's earth.

[*17] 17. The composition of claim 1 wherein [tne] the mineral clay is at least one of the classes consisting of amorphous clays of the allophane group and crystalline clays of the 2-layer type, 3-layer type, expanding type, non-expanding type, elongate type, regular mixed layer type, and chain structure type.

[*18] 18. The composition of claim 1 wherein the mineral clay is bentonite.

[*19] 19. The composition of claim 1 wherein the mineral clay is beneficiated bentonite.

[*20] 20. The composition of claim 1 wherein the weight ratio of layered
...

PAGE 129

LEVEL 1 - 118 OF 225 PATENTS

4,659,401

<=2> GET 1st DRAWING SHEET OF 2

Apr. 21, 1987

Growth of epitaxial films by plasma enchanced chemical vapor deposition (PE-CVD)

INVENTOR: Reif, L. Rafael, Newton, Massachusetts
Fonstad, Jr., Clifton G., Arlington, Massachusetts

... [*11] establishing a steady state flow of said first set of gaseous reactants in said chamber, said reactants having a concentration of atoms of a first type conductivity, such as to produce a layer of that type conductivity when deposited;

(c) after steady state flow is achieved heating said substrate to a temperature high enough to obtain epitaxial deposition from the first set of reactants when a decomposition reaction occurs ...

PAGE 130

LEVEL 1 - 119 OF 225 PATENTS

4,644,335

<=2> GET 1st DRAWING SHEET OF 4

Feb. 17, 1987

Apparatus and method for monitoring drill bit condition and depth of drilling

INVENTOR: Wen, Sheree H., Mohegan Lake, New York

... [*1] number of occurrences of the waveform representing the acoustic signature for each type of layer; and

means for stopping the drilling operation upon reaching a predetermined count of waveform occurrences for a particular layer type.

[*2] 2. The apparatus of claim 1 wherein said control means includes a computer for comparing the detected sequence of waveforms to a reference sequence of waveforms stored in said computer corresponding to the multilayered ...

... [*6] type of layer for each signal; and

means for separately stopping the drilling operation of at least one drill bit upon reaching a predetermined count of waveform occurrences for a particular layer type for each drill bit.

[*7] 7. The apparatus of claim 1 or 6 further including a filter means for filtering out low and high frequency noise.

[*8] 8. In a multiple ...

... [*8] said reference signal representing an acoustic signature for a proper drill bit drilling having each type of layer, for counting the number of occurrences of the waveform representing the acoustic signature for each layer type for each of said drill bits, and for detecting when the acoustic signature of at least one of said output signals is different from the acoustic signature of said reference signal thereby detecting an improper drill bit condition; and

...

... [*8] bit upon detection of an improper drill bit condition; and

means for stopping the drilling operation of at least one drill bit upon reaching a predetermined count of waveforms occurrences of a particular layer type for one or more drill bits.

[*9] 9. A method for drilling to a predetermined depth of a multilayer workpiece comprising:

acoustically detecting drill bit vibrations as the drill bit ...

... [*9] layer;

counting the number of occurrences of the waveform representing the acoustic signatures for each type of layer; and

stopping the drilling operation upon reaching a predetermined count of waveform occurrences for a particular layer type.

[*10] 10. The method of claim 9 further including the steps of producing an output signal having a sequence of waveforms representing the acoustic signatures corresponding to the sequence of layers, comparing the sequence of waveforms to a reference sequence and ...

... [*12] least one of said output signals and said reference signal; and

stopping the drilling operation of at least one drill bit upon reaching a predetermined count of waveform occurrences for a particular layer type for one or more drill bits.

PAGE 132

LEVEL 1 - 120 OF 225 PATENTS

4,629,632

Dec. 16, 1986

Production of magnetic recording media

INVENTOR: Balz, Werner, Limburgerhof, Federal Republic of Germany
Kovacs, Jenoe, Hessheim, Federal Republic of Germany
Lechner, Hilmar, Frankenthal, Federal Republic of Germany
Schaefer, Dieter, Lindenberg, Federal Republic of Germany
Buethe, Ingolf, Boehl-Iggelheim, Federal Republic of Germany

We claim:

[*1] 1. A process for the production of a layer-type magnetic recording medium by applying a dispersion of a magnetically anisotropic material in a binder solution onto a flexible plastic base provided with an adhesion-promoting intermediate layer and then solidifying the ...

PAGE 133

LEVEL 1 - 121 OF 225 PATENTS

4,617,423

<=2> GET 1st DRAWING SHEET OF 6

Oct. 14, 1986

Data communication system

INVENTOR: Dickerson, James W., Plano, Texas
Smith, III, William N., Carrollton, Texas

What is claimed is:

[*1] 1. A network multiple physical layer interface connected to a communcations network of a first physical layer type and a second physical layer type, each layer type including a send channel and a receive channel, said interface comprising:

a first circuit means for receiving data from said first physical layer send channel and receive channel and ...

LEVEL 1 - 122 OF 225 PATENTS

4,614,185

<=2> GET 1st DRAWING SHEET OF 1

Sep. 30, 1986

Piston engine having a phosphatized cylinder wall

INVENTOR: Fox, Richard C., Mobile, Alabama

... [*4] 1, wherein said integral layer of crystalline phosphate is characterized by resistance to wear by said piston ring during operation of said engine.

[*5] 5. The invention according to claim 1, wherein said integral layer is of the type assisting the seating of said piston ring in said cylinder.

[*6] 6. The invention according to claim 1, wherein said cylinder head is an aluminum cylinder head.

[*7] 7. The invention according to claim 6, wherein said ...

LEVEL 1 - 123 OF 225 PATENTS

4,611,114

<=2> GET 1st DRAWING SHEET OF 2

Sep. 9, 1986

Photoelectric detection structure having substrate with controlled properties

INVENTOR: Dolizy, Pierre, Ris-Orangis, France
Groliere, Francoise, Nogent-sur-Marne, France
Maniguet, Francois, Fontenay-Tresigny, France

... [*8] according to claim 7, wherein said tri-alkaline material is SbNa2K, Cs.

[*9] 9. A photoelectric detection structure according to claim 7, wherein said photosensitive layer has a thickness corresponding to a photoelectric layer of the type S20 or S25.

[*10] 10. A photoelectric detection structure according to claim 2, wherein said photosensitive layer is a bi-alkaline photosensitive material.

[*11] 11. A photoelectric detection structure according to claim ...
PAGE 136

LEVEL 1 - 124 OF 225 PATENTS

4,604,673

Aug. 5, 1986

Distribution transformer with surge protection device

INVENTOR: Schoendube, Charles W., Hickory, North Carolina

What I claim as new is:

[*1] 1. A distribution-type single-phase transformer having a surge protection arrangement comprising;

(a) a layer-type high voltage winding having two terminals, one being a high voltage terminal for connection to a high voltage line,

(b) a divided low voltage winding comprising two ... PAGE 137

LEVEL 1 - 125 OF 225 PATENTS

4,587,720

<=2> GET 1st DRAWING SHEET OF 1

May 13, 1986

Process for the manufacture of a self-aligned thin-film transistor

INVENTOR: Chenevas-Paule, Andre , Grenoble, France
Diem, Bernard, Meylan, France

... [*2] wavelength of the order of 600 nanometers.

[*3] 3. A process according to claim 1, wherein step (h) comprises:

depositing a layer of n + type amorphous silicon on the entire structure;

depositing a conducting layer on the type n + silicon layer;

eliminating the regions respectively of the conducting layer and of the type n + silicon layer situated in line with said grid; and

making the electrodes of the source and of the drain in said conducting layer.

[*4] 4. A process according to claim 1, wherein said insulating layer is ...
PAGE 138

LEVEL 1 - 126 OF 225 PATENTS

4,584,553

Apr. 22, 1986

Coated layer type resistor device

INVENTOR: Tokura, Norihito, Nukata, Japan
Kawai, Hisasi, Toyohashi, Japan

We claim:

[*1] 1. A coated layer type resistor device comprising:

an insulator substrate;

a first resistor element formed on said insulator substrate and consisting of a resistor layer and end conductor electrodes at the ends of said resistor layer; and

a ...

... [*1] conductor electrodes and the adjacent intermediate conductor in said second resistor element being equal to the distance between end conductor electrodes in said first resistor element.

[*2] 2. A coated layer type resistor device according to claim 1, wherein:

said end conductor electrodes and said intermediate conductors are formed by printing on said insulator substrate;

on said insulator substrate having said formed end conductor electrodes and intermediate conductors, a resistor layer is formed by printing; and

said formed resistor layer is in contact with said formed end conductor electrodes and intermediate conductors.

[*3] 3. A coated layer type resistor device according to claim 1, wherein a bridge circuit is constituted by said first and second resistor elements.

LEVEL 1 - 127 OF 225 PATENTS

4,576,116

<=2> GET 1st DRAWING SHEET OF 1

Mar. 18, 1986

Collapsible house for cats

INVENTOR: Binkert, Gerald A., 308 Gould Ave. SE., Bemidji, Minnesota 56601

... [*1] A collapsible A-frame house providing a common site for a cat to rest, exercise and play, comprising

(a) a roof formed of a single unitary continuous flexible layer-type material having a backside and a cushiony outward face, said roof including an elongate peak and two roof panels integral with the peak and depending downwardly and outwardly from the peak, each said roof panel having a bottom edge, the outward face of the flexible layer-type material being the outward face of the roof and being adapted to withstand cat clawing, the peak of the roof being adapted for flexing in a hinge-like manner to permit inward movement of the roof ...

... [*1] another when the house is to be collapsed;

(b) a stiffening means on the backside of each roof panel for supporting the same;

(c) a floor panel formed of a single unitary continuous flexible layer-type material having a bottom side and a cushiony top side, said floor panel having opposing edges thereof affixed to the bottom edges of the roof panels to limit the separation distance between said bottom edges, the floor panel being adapted for folding along its longitudinal center line generally parallel to its opposing edges, and the flexible layer-type material adjacent the junction of the bottom edges of the roof panels and the opposing edges of the floor panel being such as to serve a hinge function for allowing the floor panel to fold as the roof panels ...

... [*10] A collapsible A-frame house providing a common site for a cat to rest, exercise and play, comprising

(a) a roof formed of a single unitary continuous flexible layer-type material having a backside and a cushiony outward face, said roof including an elongate peak and two roof panels integral with the peak and depending downwardly and outwardly from the peak, each said roof panel having a bottom edge, the outward face of the flexible layer-type material being the outward face of the roof and being adapted to withstand cat clawing, the peak of the roof being adapted for flexing in a hinge-like manner to permit inward movement of the roof ...

... [*10] another when the house is to be collapsed;

(b) a stiffening means on the backside of each roof panel for supporting the same; and

(c) a floor panel formed of a single unitary continuous flexible layer-type material having a bottom side and a cushiony top side, said floor panel having opposing edges thereof affixed by staples to the bottom edges of the roof

panels to limit the separation distance between said bottom edges, the floor panel being adapted for folding along its longitudinal center line generally parallel to its opposing edges, and the flexible layer-type material adjacent the junction of the bottom edges of the roof panels and the opposing edges of

the floor panel being such as to serve a hinge function for allowing the floor panel to fold as the roof panels ...

PAGE 141

LEVEL 1 - 128 OF 225 PATENTS

4,566,460

<=2> GET 1st DRAWING SHEET OF 13

Jan. 28, 1986

Measuring method and apparatus for non-linear parameter of acoustic medium and its application

INVENTOR: Sato, Takuso, Tokyo, Japan
Ichida, Nobuyuki, Machida, Japan
Miwa, Hirohide, Kawasaki, Japan

... [*20] reception characteristics sufficient to cover both receiving said probing wave and transmitting said pumping wave.

[*21] 21. An apparatus according to claim 10, wherein said second and said third transducer comprise a layer type transducer, having a front layer as said second transducer, and a back layer as said third transducer.

[*22] 22. An apparatus according to claim 6, wherein said third means comprises:

phase ...

PAGE 142

LEVEL 1 - 129 OF 225 PATENTS

4,560,419

<=2> GET 1st DRAWING SHEET OF 3

Dec. 24, 1985

Method of making polysilicon resistors with a low thermal activation energy

INVENTOR: Bourassa, Ronald R., Colorado Springs, Colorado
Butler, Douglas B., Colorado Springs, Colorado

... [*11] 11. The method of claim 7 including establishing said first, second and third poly regions to form back-to-back polysilicon diodes.

[*12] 12. The method of claim 8 including doping a poly layer with the type of impurity for said first region of poly, then defining the poly which is to act as the resistor, the selectively doping said second and third regions of poly with the other type of impurity.

[*13] 13. The method of claim 12 wherein the ...

PAGE 143

LEVEL 1 - 130 OF 225 PATENTS

4,547,784

<=2> GET 1st DRAWING SHEET OF 6

Oct. 15, 1985

Thermal recording system and method

INVENTOR: Erlichman, Irving, Wayland, Massachusetts
Hausslein, Robert W., Lexington, Massachusetts

... [*1] for recording an image represented by pixel areas of varied density on a transparency type thermally sensitive recording medium having a transparent support layer and a transparent thermally sensitive recording layer of the type wherein recorded dot size increases with increased amounts of thermal energy applied to form a dot, said recording system comprising:

means for supporting such a transparency type of recording medium;

means ...

PAGE 144

LEVEL 1 - 131 OF 225 PATENTS

4,525,223

<=2> GET 1st DRAWING SHEET OF 16

Jun. 25, 1985

Method of manufacturing a thin ribbon wafer of semiconductor material

INVENTOR: Tsuya, Noboru, 1-38, Kashiwagi 2-Chome, Sendai, Japan
Arai, Kenichi, Sendai, Japan

... [*18] moving direction of the cooling substrate and at least two jet flows of semiconductor and gaseous or molten material including the same semiconductor are simultaneously ejected through the holes so as to form a thin ribbon of multiple-layer type.

[*19] 19. A method as defined in claim 1, wherein the thin ribbon is heat-treated at a temperature within the range from 500o C. to a melting point for a time of 0.1 ...

PAGE 145

LEVEL 1 - 132 OF 225 PATENTS

4,523,906

<=2> GET 1st DRAWING SHEET OF 8

Jun. 18, 1985

Device for drying gypsum

INVENTOR: Petrovic, Vladan, Essen, Federal Republic of Germany

... [*1] cold, wet gypsum, comprising a heater; means for feeding a plurality of heat-retaining solid particles into said heater; means for storing gypsum to be dried; a moving-layer-type drier in the form of an upright stationary container having an inlet at its top, an outlet at its bottom and a plurality of superposed funnel-like means arranged between the inlet and the outlet; means for conveying an amount of hot ...

... [*6] cold, wet gypsum, comprising a heater; means for feeding a plurality of heat-retaining solid particles into said heater; means for storing gypsum to be dried; a moving-layer-type drier in the form of an upright stationary container having an inlet at its top, an outlet at its bottom and a plurality of superposed funnel-like means arranged between the inlet and outlet; means for intermixing the amount of hot ...

LEVEL 1 - 133 OF 225 PATENTS

PAGE 146

4,513,016

Apr. 23, 1985

No-stir dry mix with pudding nuggets for cake with discontinuous pudding phase

INVENTOR: Blake, Jon R., 6901 Regent Ave N., Brooklyn Center, Minnesota 55429
Knutson, Richard K., 6948 Valley View Rd., Corcoran, Minnesota 55340
VanHulle, Glenn J., 7608 Major Ave. N., Brooklyn Park, Minnesota 55443

... [*14] length.

[*15] 15. The dry mix of claim 14 wherein the weight ratio of sugar to granules in the matrix ranges from about 1:5 to 1:6.

[*16] 16. A method for preparing a finished cake of a layer type having after baking a discontinuous pudding phase, in the finished baked cake consisting essentially of the steps of:

A. providing a dry mix for cakes, said dry mix comprising

I. from ...

PAGE 147

LEVEL 1 - 134 OF 225 PATENTS

4,510,443

<=2> GET 1st DRAWING SHEET OF 4

Apr. 9, 1985

Voltage measuring device

INVENTOR: Inaba, Ritsuo, Hirakata, Japan
Wasa, Kiyotaka, Nara, Japan

What is claimed is:

[*1] 1. A voltage measuring device for receiving and measuring a voltage to be measured and for providing an output signal corresponding thereto, said device comprising:

a first medium of the double layer type for propagating surface acoustic waves, said first medium comprising a piezoelectric thin film which is laminated on a substrate comprising a non-piezoelectric material;

a first transducer means ...

LEVEL 1 - 135 OF 225 PATENTS

4,506,004

<=2> GET 1st DRAWING SHEET OF 3

Mar. 19, 1985

Printed wiring board

INVENTOR: Sullivan, Donald F., 115 Cambridge Rd., King of Prussia, Pennsylvania 19406

... [*5] substrate, and

developing the photo images by washing out the unhardened photopolymer, whereby removal of the unhardened liquid polymer layer in contact with the substrate is simple and complete.

[*6] 6. The process of claim 5 wherein the laminated photopolymer layers are of the type that are hardened by exposure to the radiation.

[*7] 7. The photo process of claim 6 including the step of partly curing the liquid photopolymer second layer by exposure to radiation before lamination.

[*8] 8. The photo process of ...

LEVEL 1 - 136 OF 225 PATENTS

4,501,303

<=2> GET 1st DRAWING SHEET OF 2

Feb. 26, 1985

Forming fabric

INVENTOR: Osterberg, Lars B., Halmstad, Sweden

What I claim is:

[*1] 1. An improved double-layer type of forming fabric for use in papermaking, cellulose and similar machines, said forming fabric consisting of two integral weaves, each one of said weaves comprising its separate sets of respective warp ...

LEVEL 1 - 137 OF 225 PATENTS

4,494,826

<=2> GET 1st DRAWING SHEET OF 2

Jan. 22, 1985

Surface deformation image device

INVENTOR: Smith, James L., 426 High School Dr., Grand Prairie, Texas 75050

... [*2] set forth in claim 1 wherein said grille structure layer is inside said photoconductive layer.

[*3] 3. A device as set forth in claim 1 or 2 wherein said photoconductor

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  Tue, 22 Dec 1998 12:45:15 -0500
Message-Id: <199812221745.AA26469@prod.lexis-nexis.com>
Received: by prod.lexis-nexis.com (Internal Mail Agent-1);
  Tue, 22 Dec 1998 12:45:15 -0500
Date: Tue, 22 Dec 1998 12:45:14 -0500
From: lexis-nexis@prod.lexis-nexis.com (LEXIS(R)/NEXIS(R) Print Delivery)
To: dmorris@watson.ibm.com
Subject: LEXIS(R)/NEXIS(R) Print Request Job 68990, 3 of 4

layer is of the type which requires high electric field for significant photoconduction such as CdS powder in plastic.

[*4] 4. A device as set forth in claim 1 wherein a nonconducting light blocking ...

LEVEL 1 - 138 OF 225 PATENTS

4,477,547

Oct. 16, 1984

Method for making complex layer type lithografic printing plate

INVENTOR: Yamada, Jun, Nagaokayo, Japan
Senga, Takao, Nagaokayo, Japan
Suzuki, Shigeyoshi, Nagaokayo, Japan

What is claimed is:

[*1] 1. A method for making a complex layer type lithographic printing plate which comprises forming a toner image on an original printing plate having organic electrophotographic photosensitive layer by electrophotographic process, said photosensitive layer being a complex layer type photosensitive layer which comprises a charge carrier generating layer comprising a charge carrier generating substance and a binder mainly composed of a polyamide resin soluble in alcohol solvent and ...

... [*1] solution mainly composed of alcohol solvent and/or alkali solvent and thereafter treating non-image area other than the toner image area with the etching solution.

[*2] 2. A method for making a complex layer type lithographic printing plate according to claim 1, wherein the polyamide resin of the binder for the charge carrier generating layer is copolymer nylon.

[*3] 3. A method for making a complex layer type lithographic printing plate according to claim 1 wherein the high molecular substance of the binder for the charge carrier generating layer is one having acid anhydride group, carboxylic acid group, sulfonic acid group or sulfonimide group.

[*4] 4. A method for making a complex layer type lithographic printing plate according to claim 1 wherein the charge carrier generating substance is an organic pigment or sensitizing dye.

[*5] 5. A method for making a complex layer type lithographic printing plate according to claim 1 wherein the charge carrier transport substance is an aromatic tertiary amino compound, an aromatic tertiary diamino compound, an aromatic tertiary triamino compound, a condensate or a heterocyclic compound.

[*6] 6. A method for making a complex layer type lithographic printing plate according to claim 1 wherein the high molecular substance contained in the binder for the charge carrier transfer layer is one having acid anhydride group, carboxylic acid group, sulfonic acid group or sulfonimide group or a phenolic resin.

[*7] 7. An original printing plate having organic electrophotographic photosensitive layer on a support for complex layer type lithographic printing plate on which a toner image is formed, said photosensitive layer comprising a charge carrier generating layer comprising a charge carrier generating substance and a binder mainly ...

Pat. No. 4477547, *7

PAGE 152

... [*7] a high molecular substance having a group soluble in an etching solution mainly composed of alcohol solvent and/or alkali solvent.

[*8] 8. A printing method which comprises carrying out printing with the complex layer type lithographic printing plate made by the method of claim 1.

PAGE 153

LEVEL 1 - 139 OF 225 PATENTS

4,470,024

<=2> GET 1st DRAWING SHEET OF 2

Sep. 4, 1984

Integrated circuit for a controllable frequency oscillator

INVENTOR: Leuenberger, Claude-Eric, Chezard, Switzerland

... [*1] said insulating layer, said chip having an oxide layer, said insulating layer being a portion of said oxide layer.

[*2] 2. The chip of claim 1, wherein said first region is a bulk layer of the type of conductivity opposite to said one type of conductivity, said bulk layer being formed in said semiconductor substrate, and said second region is a

diffusion portion of said one type of conductivity ...

LEVEL 1 - 140 OF 225 PATENTS

4,451,843

<=2> GET 1st DRAWING SHEET OF 2

May 29, 1984

Bipolar transistor with a plurality of parallelly connected base-collector junctions formed by plastic deformation of the crystal lattice

INVENTOR: Dahlberg, Reinhard, Flein, Federal Republic of Germany

... [*1] emitter region on its opposite main face so as to form an emitter-base p/n junction; the side surfaces of the ridges in the other semiconductor plate, disc or chip have a highly doped surface layer with the type of conductivity of the base region; both semiconductor discs are assembled, by mechanical pressure, so that the ridges of the structured faces of both plates, discs or chips cross and touch; and the surfaces of said ridges which are in contact are connected ...

PAGE 154

LEVEL 1 - 141 OF 225 PATENTS

4,427,607

<=2> GET 1st DRAWING SHEET OF 6

Jan. 24, 1984

Device in an evaporative cooler

INVENTOR: Korsell, Lars E. R., Stockholm, Sweden

... [*4] telescopically received only in the corresponding top openings of a similar contact body immediately therebelow.

[*5] 5. In an evaporative cooler including, a casing, at least one contact body of the multi-layer type located in said casing and formed with channels existing between the layers and which all are passed by air, and means for supplying water to selected channels in said body from above the body, the improvement comprising ...

PAGE 155

LEVEL 1 - 142 OF 225 PATENTS

4,422,627

<=2> GET 1st DRAWING SHEET OF 1

Dec. 27, 1983

Endless spring, such as ringspring

PAGE 156

INVENTOR: Schmidt, Helmut, Munich, Neubiberg, Federal Republic of Germany
Ramm, Ulrich, Neubiberg, Federal Republic of Germany
Schroeder, Alexander, Ottobrunn, Federal Republic of Germany

... [*1] comprising a spring body having a plurality of layers (2, 3, 4) made of fiber compound materials and extending in parallel to said frame plane, said layers comprising a first layer type (2) in which fiber bundles are wound so that all the fibers extend unidirectionally in said first layer type and a second layer type (3, 4), each said second layer type comprising at least two plies (5, 6) in which the fibers extend in cross-over relationship relative to each other, said first layer type and said second layer type being arranged in alternate succession relative to each other.

[*2] 2. The endless spring of claim 1, wherein said second layer type comprises one layer more than said first layer type so that the second layer type forms outer surfaces parallel to said frame plane, and so that said first layer type forms inner layers interconnected by a second type layer between two neighboring first type layers.

[*3] 3. The endless spring of claim 1, wherein said plies (5, 6) of said second layer type (3, 4) comprise at least one first ply (5) with fibers extending in parallel and at 90o relative to said main load application direction, and at least one second ply (6) with fibers extending in a +/- 45o cross-over relationship relative to said main load application direction.

[*4] 4. The endless spring of claim 3, wherein each of said second layer type (3, 4) comprises said first and second plies (5, 6), wherein a second layer type (3) located internally of the spring between two first layer types (2) comprises at least two first plies (5) and a second ply (6) located between said two first plies (5), and wherein a second layer type (4) located externally of the spring comprises at least one first ply (5) and at least one second ply (6) located on the outside of the spring.

[*5] 5. The spring of claim 1, wherein each of said first layer type (2) comprises at least two fiber bundles.

[*6] 6. The spring of claim 1, wherein said plies of said second layer type are made of fibers of different materials.

[*7] 7. The spring of claim 1, wherein said fiber bundles of said first layer type (2) are made of fibers of different materials.

[*8] 8. The spring of claim 1, wherein said fiber bundles of said first layer type (2) and said plies of said second layer type (3, 4) are made of fibers of different materials.

[*9] 9. The spring of claim 1, further comprising adhesive layers (7) operatively interposed between said first and second layer types.

[*10] 10. The spring of claim 1, further comprising spring attachment means (8) operatively secured to said endless spring for applying a load to the spring, and wear resistant plate means (9) ...

... [*10] reducing the wear imposed by the atrachment means on the spring.

[*11] 11. The spring of claim 10, wherein said plate means (9) are made of spring steel.

[*12] 12. The spring of claim 1, wherein said first and second layer types (2, 3, 4) form an endless loop having two straight legs extending in parallel to each other and two curved end portions operatively interconnecting said straight legs.

[*13] 13. The spring of ...

LEVEL 1 - 143 OF 225 PATENTS

4,419,310

<=2> GET 1st DRAWING SHEET OF 2

Dec. 6, 1983

SrTiO3 barrier layer capacitor

INVENTOR: Burn, Ian, Williamstown, Massachusetts
Neirman, Stephen M., Williamstown, Massachusetts

What is claimed is:

[*1] 1. A method for making an intergranular barrier layer type capacitor without heating in a reduced atmosphere comprising:

(a) preparing a ceramic start mixture consisting essentially of strontium, titanium and strontium-titanate donor compounds, said donors being ...

PAGE 159

LEVEL 1 - 144 OF 225 PATENTS

4,414,059

<=2> GET 1st DRAWING SHEET OF 3

Nov. 8, 1983

Far UV patterning of resist materials

INVENTOR: Blum, Samuel E., White Plains, New York
Brown, Karen H., Yorktown Heights, New York
Srinivasan, Rangaswamy, Ossining, New York

... [*7] final step thereof includes the treatment of said exposed portions of said substrate through said patterned resist layer to modify the characteristics of said exposed portions.

[*8] 8. A method for patterning resist layers of the type used in lithography processes, comprising the steps of:

depositing a layer of said resist on a substrate, and

irradiating selected areas of said resist layer with ultraviolet radiation having wavelengths less than 220 nm and an ...

PAGE 160

LEVEL 1 - 145 OF 225 PATENTS

4,411,539

<=2> GET 1st DRAWING SHEET OF 7

Oct. 25, 1983

Print element with plural type layers of varying thickness

INVENTOR: Iwata, Nobuo, Sagamihara, Japan
Hasegawa, Takashi, Hiratsuka, Japan

... [*1] by the hammer, and the vertical dimension of the character carried by the type member; such variance in thicknesses eliminating ghost printing caused by the undesired touching of the paper by the type member adjacent in layer to the type member struck by the member.

[*2] 2. A print element as claimed in claim 1, wherein the print element is formed in a form of a disc type print wheel including ...

PAGE 161

LEVEL 1 - 146 OF 225 PATENTS

4,405,533

<=2> GET 1st DRAWING SHEET OF 4

Sep. 20, 1983

Supply device for use with evaporative contact bodies

INVENTOR: Norback, Per, Lidingo, Sweden
Eriksson, Borje, Sigtuna, Sweden

We claim:

[*1] 1. A supply device for use in a evaporative contact body of the multi-layer type having gaps between the layers of the body to which water is supplied from above and air is supplied from below, said device comprising water supply pipes and means for forming jets of water and directing said water jets ...

PAGE 162

LEVEL 1 - 147 OF 225 PATENTS

4,403,236

Sep. 6, 1983

Boundary layer type semiconducting ceramic capacitors with high capacitance

INVENTOR: Mandai, Haruhumi, Nagaokakyo, Japan
Nishimura, Kunitaro, Youkaichi, Japan
Yamaguchi, Masami, Nagaokakyo, Japan

What we claim is:

[*1] 1. A boundary layer type semiconducting ceramic capacitor comprising a semiconducting ceramic body in which grain boundaries on crystal grans of the semiconducting ceramic body are insulated, characterized in that said semiconducting ceramic body has a composition ...

... [*1] consisting of Mn, Bi, Cu, Pb, B and Si, and that the maximum crystal grain present in the semiconducting ceramic body has a grain size ranging from 100 mu to 250 mu .

[*2] 2. The boundary layer type semiconducting ceramic capacitor according to claim 1 wherein said composition contains 0.02 to 0.2 mole % of Mn.

[*3] 3. The boundary layer type semiconducting ceramic capacitor according to claim 2 wherein Mn is present in at least one of the grain boundaries and the crystal grains.

[*4] 4. The boundary layer type semiconducting ceramic capacitor according to claim 1 wherein said composition further contains at least one of 0.05 to 0.5 mole % of SiO2 and 0.02 to 0.2 mole % of Al2O3.

[*5] 5. The boundary layer type semiconducting ceramic capacitor according to claim 2 wherein said composition further contains at least one of 0.05 to 0.5 mole % of SiO2 and 0.02 to 0.2 mole % of Al2O3.

[*6] 6. The boundary layer type semiconducting ceramic capacitor according to claim 2 wherein Mn is present in the crystal grains.

[*7] 7. The boundary layer type semiconducting ceramic capacitor according to claim 2 wherein Mn is present in the grain boundaries of the crystal grains, and wherein said grain boundaries of the crystal grains are insulated by Mn and at least one other insulating agent.

[*8] 8. The boundary layer type semiconducting ceramic capacitor according to claim 1 in which the amount of the main component is 98.1 to 99.88 mole %.

[*9] 9. The boundary layer type semiconducting ceramic capacitor according to claim 8 wherein Mn is present at at least one of the grain boundaries and the crystal grains.

[*10] 10. The boundary layer type semiconducting ceramic capacitor according to claim 9 wherein Mn is present at the crystal grains.
GE 163

Pat. No. 4403236, *10

[*11] 11. The boundary layer type semiconducting ceramic capacitor according to claim 10 wherein said composition further includes at least one of 0.05 to 0.5 mole % of SiO2 and 0.02 to 0.2 mole % of Al2O3.

[*12] 12. The boundary layer type semiconducting ceramic capacitor according to claim 9 wherein said composition further includes at least one of 0.05 to 0.5 mole % of SiO2 and 0.02 to 0.2 mole % of Al2O3.

[*13] 13. The boundary layer type semiconducting ceramic capacitor according to claim 8 wherein said main component is (Sr1 - xBa[x])TiO3.

[*14] 14. The boundary layer type semiconducting ceramic capacitor according to claim 1 wherein said main component is (Sr1 - xBa[x])TiO3.
PAGE 164

LEVEL 1 - 148 OF 225 PATENTS

4,397,886

<=2> GET 1st DRAWING SHEET OF 1

Aug. 9, 1983

Method for making a ceramic intergranular barrier-layer capacitor

INVENTOR: Neirman, Stephen M., Williamstown, Massachusetts
Burn, Ian, Williamstown, Massachusetts

What is claimed is:

[*1] 1. A method for making a ceramic intergranular barrier layer type capacitor comprising:

(a) preparing a ceramic start mixture consisting essentially of strontium, titanium, a strontium-titanate-donor and manganese, said donor being selected from large cations A, small ...

PAGE 165

LEVEL 1 - 149 OF 225 PATENTS

4,386,135

May 31, 1983

Stable silicone-coated release liner for pressure-sensitive adhesive sheets

INVENTOR: Campbell, Karen J., Anoka, Minnesota
Evans, Jack L., St. Paul, Minnesota

... [*1] hydrogen in (2) to silicon-bonded ethylenically unsaturated radicals in (1) being from 1:1 to 20:1.

[*2] 2. The release liner of claim 1 wherein each side of the base sheet is provided with a silicone layer of the type defined.

[*3] 3. The release liner of claim 1 wherein R and R<1 > are both methyl.

[*4] 4. The release liner of claim 1 wherein R<2 > is a vinyl radical.

[*5] 5. The release liner of claim ...

LEVEL 1 - 150 OF 225 PATENTS

4,363,997

<=2> GET 1st DRAWING SHEET OF 2

Dec. 14, 1982

Fluorescent lamp having reflective layer

INVENTOR: Kodama, Churyo, Ohme, Japan

What is claimed is:

[*1] 1. A fluorescent lamp of the reflective layer type comprising a glass tube, a first phosphor layer formed on the entire face of the inner wall of said glass tube and a second phosphor layer formed on said first phosphor layer at ...

... [*1] m and the average particle size of the phophor constituting said first phosphor layer is smaller than the average particle size of the phosphor constituting said second phosphor layer.

[*2] 2. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the average particle size of the phosphor constituting the first phosphor layer is smaller than 10 mu m.

[*3] 3. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the average particle size of the phosphor constituting the second phosphor layer is smaller than 30 mu m.

[*4] 4. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein each of the amounts coated of the phosphors of the first and second phosphor layers is 2 to 4 mg/cm<2> .

[*5] 5. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the reflection angle is in the range of 180oto 240o.

[*6] 6. A fluorescent lamp of the reflective layer type as set fort in claim 5, wherein the reflection angle is 180o.

[*7] 7. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the phosphor constituting the first phosphor layer has the same light emission spectrum as that of the phosphor constituting the second phosphor layer.

[*8] 8. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the phosphor constituting the first phosphor layer has a light emission spectrum different from that of the phosphor constituting the second phospher layer.

[*9] 9. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the glass tube is a straight tube.

[*10] 10. A fluorescent lamp of the reflective layer type as set forth in claim 1, wherein the glass tube is a circular or curved tube.

LEVEL 1 - 151 OF 225 PATENTS

4,363,769

<=2> GET 1st DRAWING SHEET OF 8

Dec. 14, 1982

Method for manufacturing thin and flexible ribbon wafer of semiconductor material and ribbon wafer

INVENTOR: Tsuya, Noboru, 1-38, Kashiwagi 2-Chome, Sendai City, Japan
Arai, Kenichi, Sendai, Japan

... [*18] extending parallel to a moving direction of the ejected melt so that at least two jet flows of some or different semiconductor material are simultaneously ejected through the holes so as form a thin ribbon wafer or multi-layer type.

[*19] 19. A method as defined in claim 1, wherein the raw semiconductor material is mixed with a substance selected from the group consisting of Ge, Si, Se, Te, PbS, InSb, ZnTe, PbSe, ...

LEVEL 1 - 152 OF 225 PATENTS

4,362,597

<=2> GET 1st DRAWING SHEET OF 1

Dec. 7, 1982

Method of fabricating high-conductivity silicide-on-polysilicon structures for MOS devices

INVENTOR: Fraser, David B., Berkeley Heights, New Jersey
Kinsbron, Eliezer, Highland Park, New Jersey
Vratny, Frederick, Berkeley Heights, New Jersey

... [*1] containing layer on top of said pattern and on said selected regions, the metallic constituent in said layer being selected from the group consisting of titanium, tantalum, molybdenum, tungsten, nickel and cobalt, which metal-containing layer is of the type that, upon sintering, will form a silicide,

lifting off said pattern thereby leaving on said device only the metal-containing layer deposited on said selected regions,

sintering said remaining metal- ...

... [*4] top of said masking pattern and on said selected surface regions, the metallic constituent in said layer being selected from the group consisting of titanium, tantalum, molybdenum, tungsten, nickel and cobalt, which metal-containing layer is of the type that, upon sintering, will form a silicide,

removing said masking pattern from said polysilicon layer thereby lifting off those portions of said metal-containing layer deposited on top of said masking pattern and ...

... [*5] masking pattern and on said surface regions of said polysilicon layer, the metallic constituent in said layer being selected from the group consisting of titanium, tantalum, molybdenum, tungsten, nickel and cobalt, which metal-containing layer is of the type that, upon sintering, will form a silicide,

removing said masking pattern from said intermediate layer thereby lifting off those portions of said metal-containing layer deposited on top of said masking pattern and ...

LEVEL 1 - 153 OF 225 PATENTS

4,362,158

<=2> GET 1st DRAWING SHEET OF 2

Dec. 7, 1982

Synthetic bag-type container for human blood and its fractions, perfusion solutions, dialysis solutions and alimentary and chemical liquids in general

INVENTOR: Lena, Paolo, Via Castello, 13, 26038 Torre de'Picenardi (Cremona), Italy

... [*3] two parallel side edges of the container.

[*4] 4. A container as claimed in claim 1, particularly for containing solutions and liquids in general, wherein said initial film sheet is of the single-layer type, and is constituted by polyethylene-butyl rubber copolymer, polyethylene or polypropylene.

[*5] 5. A container as claimed in claim 1, wherein the initial film sheet has a thickness of 80-150 microns.

[*6] 6. ...

LEVEL 1 - 154 OF 225 PATENTS

4,360,S19

<=2> GET 1st DRAWING SHEET OF 4

Nov. 23, 1982

Thermal recording apparatus

INVENTOR: Saito, Tamio, Oume, Japan
Fukumoto, Yoshikatsu, Hamura, Japan
Tagaya, Kiyomi, Oume, Japan

... [*5] respective switching group and capable of limiting the switching operation of said respective switching group.

[*6] 6. A thermal recording apparatus according to claim 1, wherein said capacitor is an electrolytic capacitor of an electric double layer type construction.

[*7] 7. A thermal recording apparatus according to claim 1, wherein said detecting means comprises two serially connected resistors in parallel with said capacitor; and a comparator means, coupled to ...

... [*11] signals stored in said memory when the detected terminal voltage is less than the predetermined voltage.

[*12] 12. A thermal recording apparatus according to claim 10, wherein said capacitor is an electrolytic capacitor of electric double layer type construction.

LEVEL 1 - 155 OF 225 PATENTS

4,352,116

<=2> GET 1st DRAWING SHEET OF 7

Sep. 28, 1982

Solid state electro-optical devices on a semi-insulating substrate

INVENTOR: Yariv, Amnon, San Marino, California
Margalit, Shlomo, Pasadena, California
Lee, Chien-Ping, Pasadena, California

... [*15] matching parameters, with adjacent semi-conductor layers having different combinations of constituent elements and being of either of the N or P type, each of said layers including a region which is doped to a type opposite the layers's type whereby a PN junction is formed in the second layer; and

a first and second contacts on the top surface of the top third layer, said first contact being on the surface which is not doped and the second contact on the ...

PAGE 172

LEVEL 1 - 156 OF 225 PATENTS

4,341,686

Jul. 27, 1982

Adhesive products and a process for their use in polyurethanes

INVENTOR: Chakrabarti, Sarbananda, Ludwigshafen, Federal Republic of Germany
Hutchison, John, Wachenheim, Federal Republic of Germany
Volkert, Otto, Weisenheim, Federal Republic of Germany

... [*6] by weight of a solvent mixture of cyclohexanone/methylene chloride in a weight ratio of approximately 50:50.

[*7] 7. A process for improving the adhesiveness of cellular or noncellular polyurethanes to solid cover layers of all types wherein the improvement comprises treating the cover layers with an adhesive product comprising, based on the total weight,

(a) 1 to 10 percent by weight of an aminoalkyltrialkoxysilane,

(b) 1 to 20 percent by weight of a ...

PAGE 173

LEVEL 1 - 157 OF 225 PATENTS

4,337,216

<=2> GET 1st DRAWING SHEET OF 6

Jun. 29, 1982

Device in an evaporative cooler

INVENTOR: Korsell, Lars E. R., Stockholm, Sweden

... [*1] socket being telescopically inserted only into another single corresponding opening in an adjacent contact body.

[*2] 2. In an evaporative cooler including, a casing, at least one contact body of the multi-layer type located in said casing and formed with channels existing between the layers and which all are passed by air, and means for supplying water to selected channels in said body from above the body, the improvement comprising ...

PAGE 174

LEVEL 1 - 158 OF 225 PATENTS

4,305,670

Dec. 15, 1981

Liquid mixing device

INVENTOR: Moskowitz, Paul M., Brooklyn, New York
Rushansky, Yuliy, Bronx, New York

... [*1] surfaces of said disk extending in a plane perpendicular to the axis of rotation of said other shaft and being located symmetrically around said shaft,

said disk serving as a boundary layer type rotor in which boundary layer effects will occur along the surfaces of said disk during rotation of s disk, said boundary layer effect causing liquid to move in a downward, ...

PAGE 175

LEVEL 1 - 159 OF 225 PATENTS

4,288,992

<=2> GET 1st DRAWING SHEET OF 4

Sep. 15, 1981

Curtain for open front freezer or refrigerator

INVENTOR: Eliason, Carlyle R., 905 W. Inkster, Kalamazoo, Michigan 49008

... [*16] flexible sheet curtain being extendible across said access opening near at least one of said strip curtain and said air curtain means to the opposite wall of said cabinet to form an air layer-type thermal barrier between said flexible sheet and strips when access to said access opening is not required.

[*17] 17. The apparatus of claim 15, in which said upper front wall portion of said cabinet is ...

PAGE 176

LEVEL 1 - 160 OF 225 PATENTS

4,287,249

<=2> GET 1st DRAWING SHEET OF 4

Sep. 1, 1981

Textured surface polypropylene film

INVENTOR: Eustance, John W., So. Glens Falls, New York
Hobbs, Stanley Y., Scotia, New York
Carley, Emilie L., Hartford, New York

... [*1] properties for dielectric fluids which comprises a thin polypropylene film having one predetermined textured surface which is coextensively and uniformly covered by an overlapping pattern of fibroid irregularities comprising predominantly a stretched layer of Type I and Type II polypropylene crystal structure, and said film being characterized by a space factor of greater than about 5% and a haze measurement of greater than about 20%.

[*2] 2. The film of ...

LEVEL 1 - 161 OF 225 PATENTS

4,265,386

<=2> GET 1st DRAWING SHEET OF 2

May 5, 1981

Torsional fluid damper system

INVENTOR: Levy, Avner, Irvine, California
Karsh, Irving, Costa Mesa, California

... [*12] a loop having a bight portion extending in contact with said circumferential wall of said container.

[*13] 13. In a torsional fluid damper of the inertial mass and viscous fluid friction boundary layer type having a frequency response in the kHz region, the improvement comprising in combination:

means for containing an inertial mass and viscous fluid friction boundary layer comprising a rotatable container having an internal ...

LEVEL 1 - 162 OF 225 PATENTS

4,252,417

<=2> GET 1st DRAWING SHEET OF 2

Feb. 24, 1981

Liquid crystal display

INVENTOR: Scheffer, Terry J., Forch, Switzerland
Zeller, Hans R., Birr, Switzerland

What is claimed as new and desired to be secured by Letters Patent of the United States is:

[*1] 1. A liquid crystal display comprising:

two parallel plates having inside surfaces on which are formed layer-type electrodes and between which is disposed a liquid crystal mixture to form a liquid crystal cell, said plates having outside surfaces on which no polarizers are disposed;

said liquid crystal mixture comprising primarily ...

LEVEL 1 - 163 OF 225 PATENTS

4,243,708

<=2> GET 1st DRAWING SHEET OF 4

Jan. 6, 1981

Metallized textured surface polypropylene film

INVENTOR: Eustance, John W., South Glens Falls, New York
Hobbs, Stanley Y., Scotia, New York
Carley, Emilie L., Hartford, New York

... [*1] properties for dielectric fluids which comprises a thin polypropylene film having one predetermined textured surface which is coextensively and uniformly covered by an overlapping pattern of fibroid irregularities comprising predominantly a stretched layer of Type I and Type II crystal structure, said film being characterized by a space factor of greater than about 5% and a haze measurement of greater than about 20%, and said film having an electrically ...

LEVEL 1 - 164 OF 225 PATENTS

4,231,754

Nov. 4, 1980

Chemiluminescent analytical device

INVENTOR: Vogelhut, Paul O., Mishawaka, Indiana

... [*4] a photoresponsive layer in contact with at least one surface of said second layer which is in contact with the first layer.

[*5] 5. The test device of claim 4 wherein the photoresponsive layer is a photoresponsive imaging layer of the type which is permanently transformed by exposure to a light response in proportion to the amount of light emitted.

[*6] 6. A method for determination of a constituent in a sample which comprises contacting the sample with the ...

PAGE 181

LEVEL 1 - 165 OF 225 PATENTS

4,229,095

<=2> GET 1st DRAWING SHEET OF 3

Oct. 21, 1980

Electro-optical color imaging apparatus

INVENTOR: Mir, Jose M., Webster, New York

... [*5] produced so that the pixels of each successive strip are concurrently subjected to light of said different colors, sequentially and according to an image to be produced.

[*6] 6. Electro-optical color imaging apparatus for use with an imaging layer of the type which can record different light colors, said apparatus comprising:

(a) means for disposing such an imaging layer in an imaging station of said apparatus;

(b) a plurality of discrete electro-optical ...

PAGE 182

LEVEL 1 - 166 OF 225 PATENTS

4,228,581

<=2> GET 1st DRAWING SHEET OF 1

Oct. 21, 1980

Method for producing semiconductor bodies having a defined edge profile which has been obtained by etching and is covered with a glass

INVENTOR: Chadda, Madan M., Nu rnberg-Gaulnhofen, Federal Republic of Germany
Maier, Reinhold, Nuremberg, Federal Republic of Germany

... [*1] for producing semiconductor bodies having a glass-covered defined edge profile, said semiconductor bodies being obtained by etching from a large-area semiconductor basic wafer having a sequence of layer-type zones of different conductivity type with at least one pn-junction and a surface oxide layer thereon, the steps comprising

applying a etch-resistant protective coating onto said surface oxide layer,

cutting ...

PAGE 183

LEVEL 1 - 167 OF 225 PATENTS

4,223,234

<=2> GET 1st DRAWING SHEET OF 3

Sep. 16, 1980

Reduction of sparkle noise and mottling in CCD imagers

INVENTOR: Levine, Peter A., Trenton, New Jersey

... [*4] B register responsive to applied multiple phase voltages for the storage in and transfer of charge along the channels of said B register;

said electrodes of said A and B registers being of the single layer type and comprising semiconductor material of one conductivity type and being separated from one another by "gaps" formed of semiconductor material of opposite conductivity type; and

a control electrode insulated from the electrodes of the A register and ...

PAGE 184

LEVEL 1 - 168 OF 225 PATENTS

4,206,372

<=2> GET 1st DRAWING SHEET OF 2

Jun. 3, 1980

Reduction of sparkle noise in CCD imagers

INVENTOR: Levine, Peter A., Trenton, New Jersey

... [*1] direction over the channels of said B register responsive to applied multiple phase voltages for the storage in and transfer of charge along the channels of said B register, said electrodes being of the single layer type and comprising semiconductor material of one donductivity type and being separated from one another by semiconductor material of opposite conductivity type;

a CCD C register including a semiconductor formed with a ...

PAGE 185

LEVEL 1 - 169 OF 225 PATENTS

4,160,684

<=2> GET 1st DRAWING SHEET OF 3

Jul. 10, 1979

Method of manufacturing a coalescing demister

INVENTOR: Berger, Jr., L. Joseph, Birmingham, Michigan
Guequierre, Denis D., Birmingham, Michigan

... [*4] said cloth into place, thereby forming an anti-migration filter layer.

[*5] 5. The method described in claim 4, and including the step of placing a screen type retainer inside said anti-migration layer of the type adapted to assert pressure on said anti-migration and said drain layers and keep them in intimate contact with one another and with said inner retainer.

[*6] 6. The method described in claim 5, and including the ...

... [*8] said cloth into place thereby forming an anti-migration filter layer.

[*9] 9. The method described in claim 8, and including the step of placing a screen-type retainer inside said anti-migration layer of the type adapted to assert pressure on said anti-migration and said drain layers and keep them in intimate contact with one another and with said inner coalescer retainer.

[*10] 10. The method described in claim 9, and ...

LEVEL 1 - 170 OF 225 PATENTS

4,150,186

<=2> GET 1st DRAWING SHEET OF 2

Apr. 17, 1979

Composite board structure and a method of and an apparatus for producing the board structure

INVENTOR: Kazama, Norio, Yokohama, Japan

... [*7] copolymers, and ethylene-vinyl acetate copolymers.

[*8] 8. A composite board structure as set forth in claim 1, in which the respective thermoplastic adhesive materials forming said first and second layers are of the types which are homogeneous to each other.

[*9] 9. A composite board structure as set forth in claim 1, having a three-dimensionally curved portion.

LEVEL 1 - 171 OF 225 PATENTS

4,137,077

<=2> GET 1st DRAWING SHEET OF 1

Jan. 30, 1979

Broadening the spatial frequency pass band of a thermoplastic layer

INVENTOR: Credelle, Thomas L., East Windsor, New Jersey
Hannan, William J., Palm Beach Gardens, Florida
Spong, Fred W., Lawrenceville, New Jersey

... [*1] first and second surfaces respectively connected to a surface of a substrate and to one surface of a photoconductor layer that is adapted to receive an interference pattern of light representative of an image, the improvement comprising a thermoplastic layer of the type that has a frost frequency inversely related to thickness, said thermoplastic layer having a surface with undulations that cause said thermoplastic layer to have a multiplicity of frost frequencies, said undulations having a spatial frequency
...

... [*4] less than 100 cycles per millimeter.

[*5] 5. In a holographic recording medium wherein one surface of an electrically conductive layer is connected to a surface of a substrate, the improvement comprising a photoplastic layer of the type that has a frost frequency inversely related to thickness, said photoplastic layer having a surface with undulations that cause said photoplastic layer to have a multiplicity of frost frequencies, said undulations having a spatial frequency
...

LEVEL 1 - 172 OF 225 PATENTS

4,135,291

<=2> GET 1st DRAWING SHEET OF 2

Jan. 23, 1979

Method for producing semiconductor devices with high reverse blocking capability

INVENTOR: Tursky, Werner, Schwabach, Eichvasen, Federal Republic of Germany
Chadda, Madan, Nuremberg-Gaulnhofen, Federal Republic of Germany
Schafer, Horst, Zirndorf, Federal Republic of Germany

... [*1] method for producing a plurality of semiconductor devices out of a semiconductor disc of a first conductivity type with the devices having a high reverse blocking capability and having a sequence of at least three layer-type zones of different conductivity types, of which at least one is highly resistive, and at least one pn-junction, comprising the steps of:

forming grooves of a depth at least equal to the desired thickness of the highly resistive zone ...

... [*1] said disc into sections of smaller areal expanse capable of being separated into individual semiconductor device containing wafers;

thereafter subjecting the disc to a diffusion process to produce a sequence of at least three layer-type zones of different conductivity which form at least one pn-junction in each said section, and a zone of a single conductivity type which passes through the entire disc in the profile region of ...

... [*2] a diffusion process includes diffusing an impurity which forms a zone of the opposite conductivity type into both major surfaces of said disc to provide, in each said section, a sequence of three layer-type zones of alternating conductivity types with the zones adjacent both major surfaces being of said opposite conductivity type and an inner zone of said first conductivity type, and to provide a zone of said opposite ...

LEVEL 1 - 173 OF 225 PATENTS

4,120,700

<=2> GET 1st DRAWING SHEET OF 2

Oct. 17, 1978

Method of producing p-n junction type elements by ionized cluster beam deposition and ion-implantation

INVENTOR: Morimoto, Kiyoshi, Mobara, Japan

... [*1] substrate electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the one impurity type;

ionizing impurity atoms such as can form a semiconductor layer having the type of conductivity opposite to that of the semiconductor layer of the one impurity type;

accelerating the impurity ions by giving them kinetic energies;

implanting the impurity ions in the semiconductor layer of the one impurity type to form an ion- ...

... [*2] substrate electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the one impurity type;

ionizing impurity atoms such as can form a semiconductor layer having the type of conductivity opposite to that of the semiconductor layer of the one impurity type;

accelerating the impurity ions by giving them kinetic energies;

implanting the impurity ions in the semiconductor layer of the one impurity type to form an ion- ...

... [*3] substrate electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the one impurity type;

ionizing impurity atoms such as can form a semiconductor layer having the type of conductivity opposite to that of the semiconductor layer of the one impurity type;

accelerating the impurity ions by giving them kinetic energies;

implanting the impurity ions in the semiconductor layer of the one impurity type to form an ion- ...

... [*4] substrate electrode being formed of a metal film such as can produce an ohmic contact with the semiconductor layer of the one impurity type;

ionizing impurity atoms such as can form a semiconductor layer having the type of conductivity opposite to that of the semiconductor layer of the one impurity type;

PAGE 190

Pat. No. 4120700, *4

accelerating the impurity ions by giving them kinetic energies;

implanting the impurity ions in the semiconductor layer of the one impurity type to form an ion- ...

PAGE 191

LEVEL 1 - 174 OF 225 PATENTS

4,119,142

<=2> GET 1st DRAWING SHEET OF 2

Oct. 10, 1978

Arrangement for transferring heat from the exhaust air leaving an enclosed volume to the input air supplied to said volume

INVENTOR: Margen, Peter Heinrich Erwin, Nykoping, Sweden

... [*1] circuit, arranged in said supply conduit, a second heat exchanger in said circuit, arranged in said exhaust conduit, the improvement comprising a heat store of the stratified liquid-layer type, the hot side of which is coupled to the hot side of the circuit and the cold side of which is coupled to the cold side of said circuit, valve means for deflecting part of the hot circuit liquid into said store during normal ...

... [*2] least one by-pass line arranged in said circuit in parallel with said second heat exchanger;

means for controlling the liquid flow through said second heat exchanger; and,

layer type heat store means for supplying heat to said first heat exchanger in the form of heat extracted from said exhaust air, while said second heat exchanger is disconnected for defrosting, having the ...

LEVEL 1 - 175 OF 225 PATENTS

4,096,389

<=2> GET 1st DRAWING SHEET OF 5

Jun. 20, 1978

Apparatus for minimizing radiation exposure and improving resolution in radiation imaging devices

INVENTOR: Ashe, John B., Palatine, Illinois
Williams, Gwilym H., Palatine, Illinois
Sypal, Kenneth L., Glen Ellyn, Illinois

... [*6] improvement as defined in claim 1, wherein said sandwich assembly comprises a plurality of substantially equally spaced concentric cylindrical layers of alternating attenuation and spacing material, each said respective layer type being substantially uniform in length and in thickness, whereby a circular beam pattern is produced.

[*7] 7. The improvement as defined in claim 1, wherein said sandwich assembly comprises a layer of ...

LEVEL 1 - 176 OF 225 PATENTS

4,092,663

<=2> GET 1st DRAWING SHEET OF 2

May 30, 1978

Semiconductor device

INVENTOR: Schafer, Horst, Zirndorf-Nuremberg, Germany, Federal Republic of

I claim:

[*1] 1. In a semiconductor device with a high blocking capability comprising a semiconductor wafer having at least two layer type zones of alternatingly opposite conductivity type and different doping concentrations and forming a pn junction therebetween which intersects the edge surface of the semiconductor wafer, the higher doped of said at least two zones forming ...

LEVEL 1 - 177 OF 225 PATENTS

4,087,159

<=2> GET 1st DRAWING SHEET OF 15

May 2, 1978

Self imaging system using a waveguide

INVENTOR: Ulrich, Reinhard, Leonberg-Silberberg, Germany, Federal Republic of

... [*24] provided at an input window (E1) in FIG. 31) taking up the one half of the input surface of the waveguide.

[*25] 25. An imaging system according to claim 24, characterized by the feature that the waveguide is a layer type waveguide, which has a different thickness in the region (PS) of the input window (E1) than in the other regions.

[*26] 26. An imaging system according to claim 24, characterized by the feature that the phase shift device (...

PAGE 195

LEVEL 1 - 178 OF 225 PATENTS

4,084,863

<=2> GET 1st DRAWING SHEET OF 1

Apr. 18, 1978

Bearing and bearing liner having a compliant layer

INVENTOR: Capelli, Alfred J., Palos Verdes Peninsula, California

... [*1] height of the projection on the substrate.

[*2] 2. In a bearing including a substrate having an irregular surface and further including a thin and deformable wear resistant layer having a wear surface wherein the wear resistant layer is of the type which would be deformed by the irregular surface of the substrate upon loading of the wear resistant layer against the irregular surface, the wear resistant layer including a porous backing member and particles of a lubricant ...

PAGE 196

LEVEL 1 - 179 OF 225 PATENTS

4,037,244

<=2> GET 1st DRAWING SHEET OF 2

Jul. 19, 1977

Avalanche photodiode

INVENTOR: de Cremoux, Baudouin, Paris, France

... [*4] 3, wherein the thickness of the third layer is sufficiently thin to be transparent to the radiation, the radiation being absorbed in the first layer.

[*5] 5. A diode as claimed in claim 4, wherein said first layer has type n-conductivity, said second and third layers having type p-conductivity, the first layer having a doping concentration of the order of 10<16 > at/cm<3> ,

said second and said third layers having doping concentrations of the order of 10<19 > at/cm<3> , the thickness of the ...

... [*6] 3, wherein said third layer is sufficiently thick to absorb the radiation to be detected.

[*7] 7. A diode as claimed in claim 6, wherein the first layer has p-type conductivity, the second and third layers have type n-conductivity, the doping concentrations being of the order of 10<18 > at/cm<3 > and 10<16 > at/cm<3> , respectively.

[*8] 8. A diode as claimed in claim 1, wherein the layers are made of ...

PAGE 197

LEVEL 1 - 180 OF 225 PATENTS

4,019,843

<=2> GET 1st DRAWING SHEET OF 4

Apr. 26, 1977

Film blowhead for producing tubular film

INVENTOR: Zimmermann, Werner Josef, Lengerich of Westphalia, Germany

... [*3] in each of said pairs disposed in a common radial plane and with the radial planes in parallel relationship.

[*4] 4. A film blowhead according to claim 1 wherein the film blowhead is of multi-layer type and wherein said air inlet and outlet tubes are disposed between said axial passage portions of said distributing passages in at least one radial plane.

PAGE 198

LEVEL 1 - 181 OF 225 PATENTS

4,015,034

<=2> GET 1st DRAWING SHEET OF 2

Mar. 29, 1977

Register for index marking article

INVENTOR: Smolen, Benjamin Edward, 1501 Broadway, New York, New York 10036

... [*2] said carrier includes an adhesive surface on the face opposite said release surface for securing said carrier to a said sheet.

[*3] 3. Article in accordance with claim 1 wherein said adhesive layer is of the type having an initial low tack which is rendered highly adherent responsive to localized high pressure such as exerted by a stylus scanned in registry therewith.

[*4] 4. Article in accordance with claim 3 wherein said ...

E 199

LEVEL 1 - 182 OF 225 PATENTS

4,012,817

<=2> GET 1st DRAWING SHEET OF 1

Mar. 22, 1977

Method of making a capacitor

INVENTOR: Preissinger, Karl-Heinz, Taufkirchen, Germany, Federal Republic of
Wehnelt, Ulrich, Starnberg, Germany, Federal Republic of

We claim as our invention:

[*1] 1. A method for producing a layer type capacitor comprising the steps of

coating an adhesion-imparting layer in a dissolved state onto a first covering foil,

applying a first conductive layer with pores therein into the exposed surface of said adhesion- ...

... [*1] sides by pressing heated leads at least at one point through said

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To: dmorris@watson.ibm.com
Subject: LEXIS(R)/NEXIS(R) Print Request Job 68990, 4 of 4

covering foil and the respective of said layers into said first covering foil.

[*2] 2. A method for producing a layer type capacitor in accordance with claim 1 wherein the hardening glue is added to the adhesion-imparting layer in a concentration which does not prevent activation of said adhesion-imparting layer by penetration of the dielectric solvent ...

LEVEL 1 - 183 OF 225 PATENTS

3,969,232

<=2> GET 1st DRAWING SHEET OF 1

Jul. 13, 1976

Bearing and bearing liner wear resistant compliant layer

INVENTOR: Turner, Peter H., Burbank, California

... [*2] mixture including the adhesive.

[*3] 3. In a bearing including a substrate having an irregular surface,

a first thin wear resistant layer having a first wear surface wherein the first wear resistant layer is of the type which would be deformed by the irregular surface of the substrate upon loading of the first wear resistant layer against the irregular surface, the first wear resistant layer including a first porous backing member and ...

LEVEL 1 - 184 OF 225 PATENTS

3,958,484

<=2> GET 1st DRAWING SHEET OF 1

May 25, 1976

Sealing means for wind instruments

INVENTOR: Nelson, Robert E., Los Angeles, California
Gilbert, Robert D., Los Angeles, California

... [*4] layer.

[*5] 5. In the sealing means of claim 4 wherein said first layer is Volara material and said second layer is Volite material.

[*6] 6. In the sealing means of claim 5 wherein said first layer is Type A Volara material.

[*7] 7. In the sealing means of claim 6 wherein a third layer of material having indicia thereon is adhered to said second layer, said third layer being fixedly secured to said ...

... [*12] first layer is laminated to said second layer.

[*13] 13. The pad of claim 12 wherein said first layer is Volara material and the second layer is Volite material.

[*14] 14. The pad of claim 13 wherein said first layer is Type A Volara material.

[*15] 15. The pad of claim 14 wherein a third layer of material having indicia thereon is adhered to said second layer.

LEVEL 1 - 185 OF 225 PATENTS

3,956,624

<=2> GET 1st DRAWING SHEET OF 2

May 11, 1976

Method and device for the storage and multiplication of analog signals

INVENTOR: Audaire, Luc, St-Nizier-du-Moucherotte, France
Borel, Joseph, Echirolles, France
LE Goascoz, Vincent, Claix, France
Poujois, Robert, Grenoble, France

... [*1] ordered series is derived from the sampling of a function, wherein a multiplication of two corresponding terms is performed by recording the signal which is proportional to one sample of said function in a memory of the multiple dielectric layer type and by applying a given voltage to the gate of said transistor so as to generate a signal which is a linear function of the threshold voltage which is in turn a linear function of the writing signal at

the input of ...

PAGE 203

LEVEL 1 - 186 OF 225 PATENTS

3,949,463

<=2> GET 1st DRAWING SHEET OF 2

Apr. 13, 1976

Method of applying an anti-reflective coating to a solar cell

INVENTOR: Lindmayer, Joseph, Bethesda, Maryland
Allison, James F., Silver Springs, Maryland

... [*1] as a solar cell, an anti-reflective coating and a desired pattern of a metal electrode for current collection, comprising the steps of:

a. coating said surface with a first metal layer of the type which can be oxidized to form said anti-reflective coating,

b. forming on top of said coating a metal electrode having said desired pattern, said first metal layer having parts thereof exposed which are ...

PAGE 204

LEVEL 1 - 187 OF 225 PATENTS

3,939,642

<=2> GET 1st DRAWING SHEET OF 4

Feb. 24, 1976

Electronic timepiece semiconductor intergrated circuit

INVENTOR: Morozumi, Shinji, Nagano, Japan

... [*4] substrate is formed of a material selected from the group consisting of sapphire, spinel, silicon oxide or titanium oxide.

[*5] 5. An electronic timepiece as claimed in claim 3 wherein the P-channel transistors are depletion-layer type transistors and the N-channel transistors are reverse-layer type transistors.

[*6] 6. An electronic timepiece as claimed in claim 3, wherein said P-channel and N-channel transistors are reverse-layer channel transistors.

[*7] 7. An electronic timepiece as claimed in ...

PAGE 205

LEVEL 1 - 188 OF 225 PATENTS

3,936,730

<=2> GET 1st DRAWING SHEET OF 1

Feb. 3, 1976

Insulation test apparatus including improved means for simultaneous display

INVENTOR: Pittman, Paul F., Pittsburgh, Pennsylvania

... [*3] branches is a current transformer and said means for displaying signals is an oscilloscope.

[*4] 4. The subject matter of claim 2 wherein:

said switching means comprises a plurality of semiconductor switching devices of the four layer type connected in a series string and provided with means to trigger said series string to conduction to effect discharge of said capacitor.

[*5] 5. The subject matter of claim 1 wherein:

said means for displaying ...

PAGE 206

LEVEL 1 - 189 OF 225 PATENTS

3,930,903

<=2> GET 1st DRAWING SHEET OF 1

Jan. 6, 1976

Stabilized superconductive wires

INVENTOR: Randall, Robert N., Wayland, Massachusetts
Wong, James, Wayland, Massachusetts

What is claimed is:

[*1] 1. Superconductive multi-filament wire product comprising,

means defining a copper matrix with a plurality of spaced filaments therein,

each of the filaments comprising a layer therein of type II superconducting intermetallic compound of Beta-Wolfram structure, being the diffusion reaction product of source filaments comprising a cross-section multilayer configuration of a refractory metal layer each containing ...

PAGE 207

LEVEL 1 - 190 OF 225 PATENTS

3,929,849

<=2> GET 1st DRAWING SHEET OF 1

Dec. 30, 1975

Tetraalkyl phosphonium aluminosilicates

INVENTOR: Oswald, Alexis A., Mountainside, New Jersey

What is claimed is:

[*1] 1. Tetra-alkyl phosphonium clays of layer and chain type structure.

[*2] 2. Tetra-alkyl phosphonium clays of layer type structure.

[*3] 3. The compositions of claim 2 wherein said layer type clay is a montmorillonite.

[*4] 4. Tetra-alkyl phosphonium clays of the formula [R4P +] Clay -

wherein R is a C1 to C100 aliphatic hydrocarbyl group, and the clay is a negatively charged aluminosilicate of layer and chain ...

... [*8] C1 to C7 low aliphatic groups and C8 to C100 high aliphatic groups in such a manner that if R' is low, R" should be high and the reverse; Clay - is a negatively charged layered aluminosilicate of layer type structure.

[*9] 9. The composition of claim 8 wherein the high aliphatic groups equal C8 to C40 alkyl and the low C1 to C7 aliphatic groups are selected from the group consisting of alkyl, alkenyl and alkinyl.

[*10] 10. The composition of ...

PAGE 208

LEVEL 1 - 191 OF 225 PATENTS

3,922,777

<=2> GET 1st DRAWING SHEET OF 1

Dec. 2, 1975

Process for the production of layer circuits with conductive layers on both sides of a ceramic substrate

INVENTOR: Weitze, Artur, Pullach, Germany, Federal Republic of
Leskovar, Peter, Munich, Germany, Federal Republic of

We claim as our invention:

[*1] 1. A process for the production of layer-type printed circuits having conductive layers on both sides of a ceramic substrate which comprises providing an aperture in a green ceramic substrate, inserting into said aperture, a high melting metal pin having ...

PAGE 209

LEVEL 1 - 192 OF 225 PATENTS

3,922,567

<=2> GET 1st DRAWING SHEET OF 5

Nov. 25, 1975

Integrated IGFET bucket-brigade circuit

INVENTOR: Adam, Fritz G., Freiburg, Germany, Federal Republic of
Obermeier, Cornelius, Freiburg, Germany, Federal Republic of
Scheffer, Gerhard, Denzlingen, Germany, Federal Republic of
Wilmsmeyer, Klaus, Denzlingen, Germany, Federal Republic of

... [*1] sources of clock pulses, said first source coupled to said even-numbered transistors and said second source coupled to said odd-numbered transistors; and

a row of field-effect transistors of the depletion-layer type having source and drain regions, said field-effect transistors employing gate electrodes on an insulated-gate layer, wherein the last transistor in said row is provided with an electrical terminal to which said source of operating voltage is ...

LEVEL 1 - 193 OF 225 PATENTS

3,910,802

<=2> GET 1st DRAWING SHEET OF 1

Oct. 7, 1975

Stabilized superconductors

INVENTOR: Wong, James, Wayland, Massachusetts

What is claimed is:

[*1] 1. Superconductive multi-filament wire product comprising,

means defining a bronze matrix with a plurality of spaced filaments therein,

each of the filaments comprising a layer of type II superconducting intermetallic compound of Beta-Wolfram structure being the diffusion reaction product of a first elemental component derived from said bronze matrix and of a second elemental component derived from source ...

LEVEL 1 - 194 OF 225 PATENTS

3,895,336

<=2> GET 1st DRAWING SHEET OF 1

Jul. 15, 1975

Transformer core with composite offset V-miter and step joint

INVENTOR: Pitman, Frank A., Rome, Georgia

I claim:

[*1] 1. In a transformer core of the stacked flat-layer type having a plurality of flat, laminated, layered members of equal width, each of said members including;

two generally rectangular shaped, parallel, spaced-apart, outside leg members beveled at each end;

...

LEVEL 1 - 195 OF 225 PATENTS

3,895,335

<=2> GET 1st DRAWING SHEET OF 1

Jul. 15, 1975

Series/parallel connected single phase power transformer

INVENTOR: Manimalethu, Abraham I., Peru, Massachusetts

... [*2] consists of two high voltage windings and two low voltage windings.

[*3] 3. A single phase electrical power transformer as defined in claim 2 wherein said high voltage windings are of the layer type, the low voltage windings between high voltage windings is of the helical type and the remaining low voltage winding is of the layer type.

[*4] 4. A single phase electrical power transformer as defined in claim 2 wherein said high voltage windings are of the layer type, the low voltage windings between high voltage windings is of the helical type and the remaining low voltage winding is of the disc type.

[*5] 5. A single phase electrical power transformer as defined in claim 2 wherein said high voltage windings are of the disc type, the low voltage winding between high voltage windings of the helical type and the remaining low voltage winding is of the layer type.

[*6] 6. A single phase electrical power transformer as defined in claim 2 wherein said high voltage windings are of the disc type, the low voltage winding between the high voltage windings is of the ...

LEVEL 1 - 196 OF 225 PATENTS

3,892,655

Jul. 1, 1975

Layered clay minerals, catalysts, and processes for using

INVENTOR: Hickson, Donald A., Richmond, California

What is claimed is:

[*1] 1. A hydroconversion process comprising contacting a hydrocarbon feedstock at conventional hydroconversion conditions with a catalyst comprising: (1) a layer-type trioctrahedral, clay-like mineral, and (2) at least one hydrogenation component, said mineral having prior to dehydrating and calcining of said catalyst, the empirical formula:
MgO : sSiO2 : aAl2O3: bAB : xH2O

wherein the layer-lattice ...

... [*9] claim 1 wherein said hydrogenation component comprises platinum.

[*10] 10. A catalytic conversion process comprising contacting a hydrocarbon feedstock at conventional catalytic conversion conditions with a catalyst comprising a layer-type trioctahedral, clay-like mineral, said mineral having prior to dehydrating and calcining of said catalyst the empirical formula:
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said ...
PAGE 214

LEVEL 1 - 197 OF 225 PATENTS

3,888,678

Jun. 10, 1975

Method for adjusting triboelectric charging characteristics of materials

INVENTOR: Bailey, Jr., William J., Rochester, New York
Houle, James F., Rochester, New York
Van Norman, Gilden R., Rochester, New York

... [*50] agent has the following empirical structure:

[*51] 51. The film base element of claim 50 further including Saponin.

[*52] 52. A film base element suitable for the reception of at least one radiation sensitive layer and of the type subject to triboelectric charging upon impact and dissociation with another usually dissimilar material said element having a surface thereof modified against generation of triboelectrical charges sufficient in electrical potential to cause static ...

PAGE 215

LEVEL 1 - 198 OF 225 PATENTS

3,887,454

<=2> GET 1st DRAWING SHEET OF 1

Jun. 3, 1975

Layered clay minerals and processes for using

INVENTOR: Hickson, Donald A., Richmond, California

What is claimed is:

[*1] 1. A hydroconversion process comprising contacting a hydrocarbon feedstock at conventional hydroconversion conditions with a catalyst comprising: (1) a layer-type dioctahedral, clay-like mineral, and (2) at least one hydrogenation component, said mineral having prior to dehydrating and calcining of said catalyst, the empirical formula:
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice ...

... [*9] claim 1 wherein said hydrogenation component comprises platinum.

[*10] 10. A catalytic conversion process comprising contacting a hydrocarbon feedstock at conventional catalytic conversion conditions with a catalyst comprising a layer-type dioctahedral, clay-like mineral, said mineral having prior to dehydrating and calcining of said catalyst the empirical formula:
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said ...
PAGE 216

LEVEL 1 - 199 OF 225 PATENTS

3,884,539

<=2> GET 1st DRAWING SHEET OF 1

May 20, 1975

Method of making a multialkali electron emissive layer

INVENTOR: Sommer, Alfred Hermann, Princeton, New Jersey

I claim:

[*1] 1. A method of activating a multialkali electron-emissive cathode layer, of the type wherein a layer of antimony is exposed at elevated temperature, within an evacuated body, to vapors of a plurality of alkali metals including cesium, to form an electron-emissive compound, wherein the improvement comprises:

exposing the cathode layer to ...
LEVEL 1 - 200 OF 225 PATENTS

3,875,288

PAGE 217

Apr. 1, 1975

Production of synthetic silicate minerals

INVENTOR: Hoffman, George W., Houston, Texas
Blankenship, H. Michael, Houston, Texas
Granquist, William T., Houston, Texas

Having described the invention, we claim:

[*1] 1. The process of producing a 2:1 layer-type clay-like mineral product having the empirical formula:
nSiO2:Al2O3:mAB:xH2O

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 1.7 to 3.0,

m is from 0.2 to 0.6,

...

PAGE 218

LEVEL 1 - 201 OF 225 PATENTS

3,864,931

<=2> GET 1st DRAWING SHEET OF 1

Feb. 11, 1975

PROCESS AND APPARATUS FOR FOOD FREEZING

INVENTOR: Guttinger, Manfred, Leinfelden, Germany, Federal Republic of

... [*11] second flow than for said first flow.

[*12] 12. Process for freezing foodstuffs comprising the successive steps of:

placing foodstuffs in a substantially flat layer on a substantially horizontal support, which layer is of the type which would exert such a resistance against the through flow of a medium from above that it would be extremely difficult for the medium to flow through the layer and through the support which has a plurality of spaced openings extending therethrough,

...

PAGE 219

LEVEL 1 - 202 OF 225 PATENTS

3,864,726

<=2> GET 1st DRAWING SHEET OF 1

Feb. 4, 1975

CONTROLLABLE SEMICONDUCTOR RECTIFIER

INVENTOR: Semikron Gesellschaft fur Gleichrichterbau und Elektronid m.b.H., Zirndorf, Germany, Federal Republic of

I claim:

[*1] 1. In a controllable semiconductor rectifier device including: a monocrystalline semiconductor body having planar major outer surfaces and four layer-type zones of alternatingly opposite conductivity types with the one of the inner zones of said semiconductor body which serves as the base zone, and which is adjacent to the one of the outer zones of said semiconductor body which serves as the emitter ...

PAGE 220

LEVEL 1 - 203 OF 225 PATENTS

3,858,236

<=2> GET 1st DRAWING SHEET OF 2

Dec. 31, 1974

FOUR LAYER CONTROLLABLE SEMICONDUCTOR RECTIFIER WITH IMPROVED FIRING PROPAGATION SPEED

INVENTOR: Schafer, Horst, Zirndorf, Germany, Federal Republic of
Herbing, Lothar, Nurnberg, Germany, Federal Republic of

We claim:

[*1] 1. In a controllable semiconductor rectifier device including: a monocrystalline semiconductor body having four layer-type zones of alternatingly opposite conductivity types and with the one of the inner zones of said semiconductor body which borders on the one of the outer zones of said semiconductor body which serves as the emitter zone of the device having a portion thereof which is to ...

PAGE 221

LEVEL 1 - 204 OF 225 PATENTS

3,854,983

Dec. 17, 1974

FLAMEPROOF COVERING MATERIAL, SUCH AS TICKING

INVENTOR: Brodnyan, John G., Langhorne, Pennsylvania

I claim:

[*1] 1. A cover fabric of composite-layer type comprising a light-weight woven or damask fabric, a soft, flexible layer adhered thereto formed of a

crushed foam of a polymeric material and a metal-containing coating of about 0.5 to ...

PAGE 222

LEVEL 1 - 205 OF 225 PATENTS

3,849,217

<=2> GET 1st DRAWING SHEET OF 6

Nov. 19, 1974

METHOD OF MANUFACTURING HIGH FREQUENCY DIODE

INVENTOR: Kroger, Harry, Sudbury, Massachusetts
Potter, Curtis N., Holliston, Massachusetts

We claim:

[*1] 1. The method of making a high frequency diode device from a body of semiconductor material having type n + conductivity and having an epitaxial layer of type n conductivity, the method comprising:

forming a layer of type p conductivity material at a surface of said epitaxial layer,

forming a metal layer of chromium over said surface,

forming a metal layer of gold over said chromium layer,

...

... [*4] contiguous metal ring layers by etching, and

removing said mask.

[*5] 5. The method of making a high frequency diode device from a body of semiconductor material having type n + conductivity and an epitaxial layer having type n conductivity, the method comprising:

forming a layer of type p conductivity material at a first free surface of said epitaxial layer,

forming a base layer of gold at a second free surface of said type n + semiconductor material,

forming ...

PAGE 223

LEVEL 1 - 206 OF 225 PATENTS

3,844,979

Oct. 29, 1974

LAYERED CLAY MINERALS, CATALYSTS, AND PROCESSES FOR USING

INVENTOR: Hickson, Donald A., Richmond, California

What is claimed is:

[*1] 1. A layer-type, trioctahedral, clay-like mineral having the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and B, and wherein

s is from ...

... [*5] hydrogen form, wherein s = 1.166 a = 0.08, and said mineral having after calcination a fluoride content of from 1 to 3 weight percent.

[*6] 6. A catalytic cracking catalyst comprising dehydrated, calcined, layer-type, trioctahedral, clay-like mineral having prior to dehydration and calcining of said catalyst the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said ...

... [*7] dehydrated mineral is composited with an amorphous inorganic oxide.

[*8] 8. The catalytic cracking catalyst of claim 6 wherein said dehydrated mineral is composited with a zeolite.

[*9] 9. A catalyst composite comprising:

A. a layer-type, trioctahedral, clay-like mineral having prior to dehydration and calcining of said catalyst the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said ...

LEVEL 1 - 207 OF 225 PATENTS

3,844,978

<=2> GET 1st DRAWING SHEET OF 1

Oct. 29, 1974

LAYERED CLAY MINERALS AND PROCESSES FOR USING

INVENTOR: Hickson, Donald A., Richmond, California

What is claimed is:

[*1] 1. A layer-type, dioctahedral, clay-like mineral having the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said magnesia, said A and said B, and wherein

...

... [*5] hydrogen form, wherein s = 3.28, a = 0.74, and said mineral having after calcination a fluoride content of from 1 to 3 weight percent.

[*6] 6. A catalytic cracking catalyst comprising dehydrated, calcined, layer-type, dioctahedral, clay-like mineral having prior to dehydration and calcining of said catalyst the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said ...

... [*7] dehydrated mineral is composited with an amorphous inorganic oxide.

[*8] 8. The catalytic cracking catalyst of claim 6 wherein said dehydrated mineral is composited with a zeolite.

[*9] 9. A catalyst composite comprising:

A. a layer-type, dioctahedral, clay-like mineral having prior to dehydration and calcining of said catalyst the empirical formula
MgO : sSiO2 : aAl2O3 : bAB : xH2O

wherein the layer-lattice structure is composed of said silica, said alumina, said ...

LEVEL 1 - 208 OF 225 PATENTS

3,818,248

<=2> GET 1st DRAWING SHEET OF 2

Jun. 18, 1974

SERIALLY CONNECTED SEMICONDUCTOR SWITCHING DEVICES SELECTIVELY CONNECTED FOR PREDETERMINED VOLTAGE BLOCKING AND RAPID SWITCHING

INVENTOR: Pittman, Paul F., Pittsburgh, Pennsylvania

... [*1] minimizes the turn on time of said first number of devices.

[*2] 2. The subject matter of claim 1 wherein: said voltage varies over a range of at least an order of magnitude; said switching devices are of the four layer type; said means for selectively connecting is such that said second number of said swtiching devices is in two groups of approximately equal size at the ends of the series connection.

[*3] 3. The subject matter of claim 1 wherein: ...

LEVEL 1 - 209 OF 225 PATENTS

3,816,343

Jun. 11, 1974

KAOLINITE COATED WITH SYNTHESIZED LAYER-TYPE SILICATE MINERALS

INVENTOR: Hoffman, George W., Houston, Texas
Granquist, William T., Houston, Texas

Having described the invention, we claim:

[*1] 1. The process of preparing a synthetic layer-type mineral-kaolinite complex which consists in commingling kaolinite with a reaction mixture consisting essentially of:

water;

a minor proportion of alumina;

silica in the molar ratio to said alumina of 2.7 to 3.3; and

...

... [*1] alumina of 0.2 to 0.6;

thereafter autoclaving the mixture thus formed at a temperature within the range of 280o to 315oC. for a period of time sufficient for said reaction mixture to be converted to a layer-type clay-like mineral;

and cooling said mixture and recovering said complex therefrom.

[*2] 2. The process in accordance with claim 1 wherein the weight ratio of solids in said reaction mixture to said kaolinite is within the range of from 5 : 1 to 1 : 5.

[*3] 3. A complex consisting essentially of particles of kaolinite coated with a layer-type mineral having the empirical formula:
nSiO2:Al2O3:mAB:xH2O

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 2.4 to 3.0,

m is from 0.2 to 0.6,

A is one equivalent of an ...

... [*3] density than a mechanical mixture of the same said components of said clay-like mineral in said kaolinite.

[*4] 4. A complex in accordance with claim 3 in which the weight ratio of said layer-type mineral to said kaolinite is within the range of from 5:1 to 1:5.

LEVEL 1 - 210 OF 225 PATENTS

3,761,171

<=2> GET 1st DRAWING SHEET OF 3

Sep. 25, 1973

NEGATIVE-POSITIVE, POSITIVE-POSITIVE EXPOSURE STATION

INVENTOR: Fields, Gary D., Parker, Colorado

... [*15] comprising:

means for supporting the photosensitive surface for exposure;

a layered sandwich structure which includes in order:

a first transparent electrode;

a photoconductive layer;

a liquid crystal layer of the type having the capacity to store an image at least temporarily; and

a second transparent electrode;

means for applying a first potential between said electrodes during formation of a temporary image in said ...

... [*16] means for supporting the charged photoconductive surface for exposure;

a layered sandwich structure which includes in order:

a first transparent electrode;

a photoconductive layer;

a liquid crystal layer of the type having the capacity to store an image at least temporarily; and

a second transparent electrode;

means for applying a first potential between said electrodes during formation of a temporary image in said ...

LEVEL 1 - 211 OF 225 PATENTS

PAGE 228

3,720,847

<=2> GET 1st DRAWING SHEET OF 3

Mar. 13, 1973

POWER CURRENT CRYOTRON WITH FLAT GATE CONDUCTOR

INVENTOR: Massar, Ernst, Erlangen, Germany, Federal Republic of

I claim:

[*1] 1. A power current cryotron comprising an insulating member and a layer type gate conductor superconducting layer on the insulating member, said layer having a thickness in the order of magnitude of the depth of penetration of a magnetic field into the superconducting layer, said insulating member and said layer ...

... [*1] during operation of said cryotron adjacent portions of said layer conduct current in opposite directions.

[*2] 2. A power current cryotron comprising a tubular insulating member having an axis and a layer type gate conductor superconducting layer on said insulating member, said layer having a thickness in the order of magnitude of the depth of penetration of a magnetic field into the superconducting layer, said insulating member and said ...

LEVEL 1 - 212 OF 225 PATENTS

PAGE 229

3,719,535

<=2> GET 1st DRAWING SHEET OF 1

Mar. 6, 1973

HYPERFINE GEOMETRY DEVICES AND METHOD FOR THEIR FABRICATION

INVENTOR: Zoroglu, Demir S., 4917 North 73rd Street, Apt. 9, Scottsdale, Arizona 85251

... [*1] sequence of steps and the use of materials for minimizing the number of steps required, comprising the steps of:

providing a semiconductor body of a first type of conductivity and having an upper surface;

forming a first passivating layer of the type operating to act as a diffusion barrier on said upper surface;

forming a plurality of apertures in said passivating layer which are aligned each to the other;

forming a second passivating layer of the type through which conductivity type determining impurities pass over said first layer and said exposed surface of said semiconductor body;

forming a third passivating layer of the type operating to act as a diffusion barrier over said second layer;

patterning said third layer such as to form at least one aperture overlying a selected aperture in said ...

... [*6] steps and through the use of materials for minimizing the number of steps required, comprising the steps of:

providing a semiconductor body of a first type of conductivity and having an upper surface;

forming a first passivating layer of the type operating to act as a diffusion barrier on said upper surface;

forming a plurality of apertures in said passivating layer which are aligned each to the other for exposing an equal plurality of surface ...

E 230 PAG

LEVEL 1 - 213 OF 225 PATENTS

3,716,969

<=2> GET 1st DRAWING SHEET OF 2

Feb. 20, 1973

CONTINUOUS MOVING LAYER TYPE ADSORPTION DEVICE

INVENTOR: Maeda, Isamu, Niihama-shi, Japan

What I claim is:

[*1] 1. A continuous moving layer type adsorption device employed in a gas desulfurization system, comprising:

a. an adsorption vessel main body filled with activated charcoal, and

b. a rectifying device, said adsorption vessel main ...

LEVEL 1 - 214 OF 225 PATENTS

3,713,828

Jan. 30, 1973

MULTI-LAYER COLOR PHOTOGRAPHIC SILVER HALIDE LIGHT-SENSITIVE MATERIALS

INVENTOR: Hayashi, Jun, Kanagawa, Japan
Sato, Akira, Kanagawa, Japan

What is claimed is:

[*1] 1. A multi-layer type color photographic light-sensitive material characterized in that a merocyanine dye having the following general formula [I]

wherein X is a member selected from the group consisting of a sulfur atom, a selenium ...

... [*1] consisting of thiazolines, thiazoles, benzthiazoles, naphthothiazoles, oxazoles, benzoxazoles, naphthoxazoles, selenazoles, benzselenazoles naphthoselenazoles, benzimidazoles, naphthoimidazoles, 2-quinolines, 2-pyridines, and indolenines, is incorporated in at least one layer of said multi-layer type color photographic light-sensitive material, said multi-layer type color photographic light-sensitive material comprising, in order,

[*1] 1. a support,

[*2] 2. a subbing layer,

[*3] 3. a red sensitive silver halide emulsion layer,

[*4] 4. a ...

... [*5] 1 to 10.0 mole percent, the remaining silver halide emulsion layers containing a silver halide selected from the group consisting of AgBr, AgI, AgCI, AgClBr, AgClI, AgIBr and AgClIBr.

[*2] 2. The multi-layer type color photographic light-sensitive material as claimed in claim 1 wherein each of R1, R2 and R3 is selected from a group consisting of a hydrogen atom, a methyl group, an ethyl ...

... [*2] group, a sulfobutyl group, a 4-carboxyphenethyl group, a 4-sulfophenethyl group, a phenyl group, a 4-carboxyphenyl group, and a 4-sulfophenyl group.

[*3] 3. The multi-layer type color photographic light-sensitive material as claimed in claim 1 wherein the heterocyclic ring completed by Z is selected from the group consisting of the thiazolines, thiazoles, benzthiazoles, naphthothiazoles, oxazoles, benzoxazoles, naphthoxazoles, selenazoles,

benzselenazoles, naphthoselenazoles, indolenines, benzimidazoles, naphthoimidazoles, 2-quinolines and 2-pyridines.

[*4] 4. The multi-layer type color photographic light-sensitive material as claimed in claim 1, wherein said merocyanine dye is incorporated in at least one of the layers consisting of the silver halide emulsion layers and the layers adjacent to the silver halide emulsion layers.

[*5] 5. The multi-layer type color photographic light-sensitive material as claimed in claim 1, wherein, after development, cyan, magenta, and yellow images are formed in the red-sensitive, the green-sensitive, and the blue-sensitive silver halide emulsion layers, respectively.

[*6] 6. The multi-layer type color photographic light-sensitive material as claimed in claim 1, wherein the silver halide is selected from the group consisting of silver bromide, silver iodide, silver chloride, silver chlorobromide, silver iodobromide, and silver chloro-iodobromide.

[*7] 7. The multi-layer type color photographic light-sensitive material as claimed in claim 1, wherein said merocyanine dye has the formula

[*8] 8. The multi-layer color photographic light-sensitive material as claimed in ...

PAGE 233

LEVEL 1 - 215 OF 225 PATENTS

3,710,211

<=2> GET 1st DRAWING SHEET OF 1

Jan. 9, 1973

FRONT CONTACTED ELECTRICAL COMPONENT

INVENTOR: Behn, Reinhard, Balanstr. 95, Munich, Germany, Federal Republic of
Gottlob, Heinrich, Annahofstr. 25, Regensburg, Germany, Federal Republic of
Hoyler, Gerhard, Balanstr. 362, Munich, Germany, Federal Republic of
Kessler, Hartmut, Dechbettener Str. 19, Regensburg, Germany, Federal Republic of

We claim as our invention:

[*1] 1. A stacked layer type capacitor for being supported on its lead wires in spaced apart openings on a printed circuit board comprising: a plurality of planar stacked dielectric layers, a metal coating on each of the ...

PAGE 234

LEVEL 1 - 216 OF 225 PATENTS

3,698,296

Oct. 17, 1972

ACTINIC LABEL-MAKING TOOL

INVENTOR: Heuser, Elliott G., Mequon, Wisconsin
Muttera, Jr., William H., Whitefish Bay, Wisconsin

We claim:

[*1] 1. A label-making tool adapted for the manufacture of labels from tape which has an adhesive layer and an ultraviolet-imaging layer of the type which activates to visibly change color upon exposure to ultraviolet light and deactivates upon exposure to visible light, said tool comprising, in combination:

I. a housing having a first portion adapted to ...

LEVEL 1 - 217 OF 225 PATENTS

PAGE 235

3,696,499

Oct. 10, 1972

METHOD FOR MAKING A COMPOSITE TUBE

INVENTOR: Dromsky, John A., North Attleboro, Massachusetts

... [*6] laminate material together.

[*7] 7. A method for making a double-walled tubing comprising the steps of heating a strip of composite metal laminate material embodying a thin inner layer of Type 304 austenitic stainless steel which is sandwiched between and metallurgically bonded to two relatively thicker outer layers of Type 1008 aluminum-killed low carbon steel to a temperature in the range from about 1850oF. to about 2,005oF. for a period of time in the range from about one-half to 2 minutes, ...

LEVEL 1 - 218 OF 225 PATENTS

PAGE 236

3,688,395

Sep. 5, 1972

CONSTRUCTION METHOD OF MAKING ELECTRICAL CONNECTION

INVENTOR: Cummings, Harold K., Whitewater, Wisconsin

... [*1] contact therewith.

[*2] 2. The invention in accordance with claim 1,

wherein said base member has an outer conductive surface on which said cutting means is formed, and

wherein said insulated wire is wound to form a coil of the multi-layer type.

[*3] 3. The invention in accordance with claim 1,

wherein said base member is a terminal to which said insulated wire is to be electrically connected.

[*4] 4. A method of making a multi-layer electrical ...

LEVEL 1 - 219 OF 225 PATENTS

3,664,973

May 23, 1972

HYDROTHERMAL METHOD FOR MANUFACTURING A NOVEL CATALYTIC MATERIAL, CATALYSTS CONTAINING SAID MATERIAL, AND PROCESSES USING SAID CATALYSTS

INVENTOR: Jaffe, Joseph, Berkeley, California

What is claimed is:

[*1] 1. A synthetic layer-type, crystalline, clay-like mineral having the empirical formula:

nSiO2 : Al2O3 : mAB : xH2O

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 0.4 to 15.0

m is from 0.2 to 0.6

...

... [*7] hydrogenating component precursor selected from compounds of Group VI metals and compounds of Group VIII metals.

[*8] 8. A hydrocarbon conversion catalyst cracking component material obtained by the dehydration of a synthetic layer-type, crystalline, clay-like mineral having the empirical formula:

nSiO2 : Al2O3 : mAB : xH2O

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 0.4 to 15.0

m is from 0.2 to 0.6

...

... [*12] a hydrogenating component precursor selected from compounds of Group VI metals and compounds of Group VIII metals.

[*13] 13. A process of preparing a catalytic component material which comprises dehydrating a synthetic layer-type, clay-like, crystalline mineral having the empirical formula:

nSiO2 : AL2O3 : mAB : xH2O

where the layer lattices comprise said silica, said alumina, and said B, and where

Pat. No. 3664973, *13

n is from 0.4 to 15.0

m is from 0.2 to 0.6

...

LEVEL 1 - 220 OF 225 PATENTS

3,626,352

Dec. 7, 1971

ATTENUATOR SWITCHES HAVING DEPOSITED LAYER-TYPE CIRCUITRY

INVENTOR: McCoig, Kenneth W., Anaheim, California

... [*2] said second wafer being movable relative to said first wafer,

an attenuation circuit disposed on a face of said first wafer, said attenuation circuit comprising a resistor array having deposited-layer-type resistors and conductors,

contact means, attached to said first wafer, for making electrical connection to conductors of said resistor array, said contact means having contact ends spring biased against said ...

... [*2] circuit depending on the relative orientation of said first and second wafers.

[*3] 3. An attenuator switch as defined in claim 2 wherein said electrically insulative material comprises a ceramic and wherein said deposited layer-type resistors are fabricated of cermet or conductive plastic.

[*4] 4. An attenuator switch as defined in claim 2 wherein said resistor array comprises first, second, and third resistors connected as a pi ...

... [*11] spaced parallel relationship with a plurality of rotary wafers,

a shaft extending through an opening in the middle of each stationary wafer and cooperating to rotate simultaneously all of said rotary wafers,

a deposited layer-type attenuator section disposed on each of said stationary wafers, each attenuator section comprising deposited layer-type resistors and conductors,

a set of deposited layer-type conductive switch pads disposed on each rotary wafer, and

spring-metal contacts extending from each stationary wafer and electrically connected to the attenuator section thereof, said contacts cooperating with switch pads on an associated rotary wafer to insert or bypass said section depending on the rotational position of said shaft.

[*12] 12. A step attenuator switch as defined in claim 11 wherein said deposited layer-type attenuator section is disposed on the front face of said stationary wafer and wherein ends of said contacts project rearwardly of said wafer through spaced holes therein.

[*13] 13. A step attenuator switch as defined in claim 11 wherein said deposited layer-type attenuator section is disposed on the front face of said stationary wafer and wherein ends of said contacts project forwardly of said wafer.

[*14] 14. A step attenuator switch as defined in claim 11 wherein ...

... [*14] each contact being attached by a fastener spaced a selected distance from a free end of said each contact,

said attenuator section comprising first, second, and third deposited layer-type resistors connected in pi configuration, a first deposited layer-type conductor connecting the junction of said first and second resistors to one of said contacts, a second deposited layer-type conductor connecting the junction of said second and third resistors to a second of said contacts, the junction of said first and third resistors being connected to a common terminal by a third deposited layer-type conductor, and

a pair of input/output terminals electrically connected respectively to said third and said fourth contacts.

[*15] 15. A bridged-T attenuator comprising:

a wafer of electrically insulative material,

portions of a bridged-T circuit disposed on both major faces of said wafer and formed of deposited layer-type components, and

wiper contact means rotatable with respect to said wafer and cooperating with said deposited layer-type components for controlling the attenuation of said attenuator.

[*16] 16. A bridged-T attenuator as defined in claim 15 wherein said wafer comprises a refractory material and has a central opening ...

... [*16] being attached to a shaft extending through said opening, said attenuator further comprising an input terminal, an output terminal and a common terminal all attached to said wafer, a pair of deposited layer-type fixed resistors being connected in series by means of deposited layer-type conductors between said input and output terminals.

[*17] 17. A bridged-T attenuator as defined in claim 16 further comprising:

a first annular deposited layer-type conductive switch pad disposed on one major face of said wafer surrounding said opening and electrically connected by means of a deposited layer-type conductive strip to said input terminal,

a first plurality of deposited layer-type conductive switch pads disposed in a circle on said one major face surrounding said central opening, a pair of said first plurality of switch pads being electrically connected respectively to said input and output terminals, and

a first plurality of deposited layer-type relative elements disposed on said one major face and electrically connected between adjacent ones of said first plurality of switch pads, said wiper contact means selectively electrically shorting one of ...

... [*17] controlling the effective resistance of one portion of said bridged-T circuit.

Pat. No. 3626352, *17

PAGE 241

[*18] 18. A bridged-T attenuator as defined in claim 17 further comprising:

a second annular deposited layer-type conductive switch pad disposed on the other major face of said wafer surrounding said opening and electrically connected by means of a deposited layer-type conductive strip to the junction of said pair of fixed resistors,

a second plurality of deposited layer-type conductive switch pads disposed in a circle on said other major face surrounding said central opening

a second plurality of deposited layer-type resistive elements disposed on said other major face, one of said second plurality of resistive elements being electrically connected between one of said second plurality of switch pads and said common ...

PAGE 242

LEVEL 1 - 221 OF 225 PATENTS

3,617,491

Nov. 2, 1971

HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII

COMPONENT AND A THORIUM OR URANIUM COMPONENT, AND PROCESS USING SAID CATALYST

INVENTOR: Csicsery, Sigmund M., Lafayette, California

... [*5] metals, and wherein said hydrogenating components are contained in said matrix.

[*6] 6. A catalyst as in claim 5, which further comprises Titania.

[*7] 7. A catalyst comprising:

A. A dehydrated layer-type, crystalline, claylike mineral-cracking component which prior to dehydration has the empirical formula nSiO2 :A1 203 :mAB: xH20,

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 2.4 to ...

PAGE 243

LEVEL 1 - 222 OF 225 PATENTS

3,617,490

Nov. 2, 1971

HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT, AND A CHROMIUM OR TUNGSTEN COMPONENT, AND PROCESS USING SAID CATALYST

INVENTOR: Csicsery, Sigmund M., Lafayette, California

... [*5] metals, and wherein said hydrogenating components are contained in said matrix.

[*6] 6. A catalyst as in claim 5, which further comprises titania.

[*7] 7. A catalyst comprising:

A. A dehydrated layer-type, crystalline, claylike mineral cracking component which prior to dehydration has the empirical formula nSiO2:Al2O3:mAB:xH2O,

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 2.4 to 3.0

...

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LEVEL 1 - 223 OF 225 PATENTS

3,617,489

Nov. 2, 1971

HYDROCRACKING CATALYST COMPRISING A LAYERED CLAY-TYPE CRYSTALLINE ALUMINOSILICATE COMPONENT, A GROUP VIII COMPONENT AND GOLD, PROCESS USING SAID CATALYST

INVENTOR: Csicsery, Sigmund M., Lafayette, California

... [*6] metals, and wherein said hydrogenating components are contained in said matrix.

[*7] 7. A catalyst as in claim 6, which further comprises titania.

[*8] 8. A catalyst comprising:

A. a dehydrated layer-type, crystalline, claylike mineral cracking component which prior to dehydration has the empirical formula

nSiO2 : A1203 : mAB : xH2O,

where the layer lattices comprise said silica, said alumina, and said B, and where

n is from 2.4 to 3.0

...

LEVEL 1 - 224 OF 225 PATENTS

3,615,501

Oct. 26, 1971

COLOR PHOTOGRAPHIC DEVELOPING PROCESS

INVENTOR: Ohi, Reiichi, Kanagawa, Japan
Shimamura, Isao, Kanagawa, Japan
Shishido, Tadao, Kanagawa, Japan

... [*4] black and white developer or in a pretreatment bath before the black and white development.

[*5] 5. The process according to claim 1 wherein said multilayer color photographic element is a coupler-in-emulsion layer-type color photographic element and said compound is incorporated in the black and white developer.

[*6] 6. The process according to claim 1 wherein said process is a high temperature process conducted at a temperature higher than ...

LEVEL 1 - 225 OF 225 PATENTS

3,611,078

Oct. 5, 1971

STABILIZED AC SUPERCONDUCTOR

INVENTOR: Massar, Ernst, Erlangen, Germany, Federal Republic of
Parsch, Claus-Peter, Erlangen, Germany, Federal Republic of

We claim:

[*1] 1. An AC superconductor, comprised of a superconducting layer of type I intended for the load current, which is placed with a minimum contact resistance upon a metallic stabilizing layer of a superconducting material of type III, which during overloading absorbs the current, at least partially and temporarily, said superconductor of type I encloses said superconductor of type III provided for stabilizing purposes in the form of a tube.

[*2] 2. The superconductor of claim 1 wherein the superconducting layer of type I is lead.

[*3] 3. The superconductor of claim 1, wherein the superconductors are concentric tubes.

[*4] 4. The superconductor of claim 3, wherein at least two mutually contacting layers of superconducting material of type III, provided for stabilization, are ...

... [*7] tube upon whose outer wall the superconductor layers are placed.

[*8] 8. The superconductor of claim 5, wherein the thickness of the respective superconducting layer is between 1 and 10 mu .

[*9] 9. An AC superconductor, comprised of a superconducting layer of type II intended for the load current, which is placed with a minimum contact resistance upon a metallic stabilizing layer of a superconducting material of type III, which during overloading absorbs the current at least ...

... [*11] III, provided for stabilization, are present which have higher critical field strengths for the alternating current the further they are from the superconductor of type II which is provided for the current load.

[*12] 12. The superconductor of claim 9 wherein the superconducting layer of type II is niobium.

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**********02630**********
PAGE 1

FOCUS - 1 OF 5 PATENTS

5,028,786

<=2> GET 1st DRAWING SHEET OF 4

Jul. 2, 1991

Array for a nuclear radiation and particle detector

INVENTOR: Da Silva, Angela J., Vancouver, Canada
Le Gros, Mark A., Vancouver, Canada
Turrell, Brian G., Vancouver, Canada
Kotlicki, Andrzej, Warsaw, Maryland, Poland
Drukier, Andrzej K., Greenbelt, Maryland

SUM:

... K) and a melting point of less than 1000o C., and more preferably less than 500o C.

The present invention also relates to a method of making an array comprising depositing a substantially continuous film layer of type I superconducting material on a substrate, removing a portion of said film to leave a plurality of discrete pixels each of a predetermined size of said type I superconducting material arranged ...

... [*13] detector as defined in claim 8 wherein said each array is a planar array.

[*14] 14. A method of making a detector array comprising depositing a substantially continuous film layer of type I superconducting material on a substrate removing a portion of said film to leave a plurality of discrete pixels each of a predetermined size of said type I superconducting material arranged ...

FOCUS - 2 OF 5 PATENTS

3,930,903

<=2> GET 1st DRAWING SHEET OF 1

Jan. 6, 1976

Stabilized superconductive wires

INVENTOR: Randall, Robert N., Wayland, Massachusetts
Wong, James, Wayland, Massachusetts

What is claimed is:

[*1] 1. Superconductive multi-filament wire product comprising,

means defining a copper matrix with a plurality of spaced filaments therein,

each of the filaments comprising a layer therein of type II superconducting intermetallic compound of Beta-Wolfram structure, being the diffusion reaction product of source filaments comprising a cross-section multilayer configuration of a refractory metal layer each containing ...

FOCUS - 3 OF 5 PATENTS

3,910,802

<=2> GET 1st DRAWING SHEET OF 1

Oct. 7, 1975

Stabilized superconductors

INVENTOR: Wong, James, Wayland, Massachusetts

What is claimed is:

[*1] 1. Superconductive multi-filament wire product comprising,

means defining a bronze matrix with a plurality of spaced filaments therein,

each of the filaments comprising a layer of type II superconducting intermetallic compound of Beta-Wolfram structure being the diffusion reaction product of a first elemental component derived from said bronze matrix and of a second elemental component derived from source ...

FOCUS - 4 OF 5 PATENTS

3,720,847

<=2> GET 1st DRAWING SHEET OF 3

Mar. 13, 1973

POWER CURRENT CRYOTRON WITH FLAT GATE CONDUCTOR

INVENTOR: Massar, Ernst, Erlangen, Germany, Federal Republic of

SUM:

... member. The tubular insulating member and the superconducting layer are of meander configuration so that during operation of the cryotron adjacent portions of the layer conduct current in opposite directions. This provides a power current cryotron with a layer type gate conductor superconducting layer having a thickness in the order of magnitude of the depth of penetration of a magnetic field into the superconducting layer.

The insulating member may comprise insulating material of cylindrical configuration or a ...

I claim:

[*1] 1. A power current cryotron comprising an insulating member and a layer type gate conductor superconducting layer on the insulating member, said layer having a thickness in the order of magnitude of the depth of penetration of a magnetic field into the superconducting layer, said insulating member and said layer ...

... [*1] during operation of said cryotron adjacent portions of said layer conduct current in opposite directions.

[*2] 2. A power current cryotron comprising a tubular insulating member having an axis and a layer type gate conductor superconducting layer on said insulating member, said layer having a thickness in the order of magnitude of the depth of penetration of a magnetic field into the superconducting layer, said insulating member and said ...

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3,611,078

Oct. 5, 1971

STABILIZED AC SUPERCONDUCTOR

INVENTOR: Massar, Ernst, Erlangen, Germany, Federal Republic of
Parsch, Claus-Peter, Erlangen, Germany, Federal Republic of

ABST:

Described is an AC superconductor, comprised of a superconducting layer of type I or II intended for the load current, which is placed with a minimum contact resistance upon a metallic stabilizing layer which during overloading absorbs the current at least partially and temporarily. The stabilizing layer is ...

SUM:

Our invention relates to an AC (alternating current) superconductor, comprised of a superconducting layer of type I or II, provided for a charge current. This layer is applied with a minimum contact resistance upon a metallic stabilizing layer which, during certain periods, absorbs, at least partially, the current ...

DETDESC:

... stabilizing layer, comprised of superconducting material of type III, with a higher critical field intensity for the alternating current. The last-mentioned layer is permitted to have considerably higher losses during an AC load than the layers of type I or II.

Suitable stabilizing layers are, fundamentally, all conventional type III superconductors, e.g. technetium. Niobium/zirconium, for instance, has a critical field strength of 1500 to 2000 Oe for alternating current of ...

... especially preferred, since they can be cooled from the inside and from the outside, for example by means of liquid helium.

According to another development of the invention, especially in the case of tubular AC superconductors, the outer layer of type I or II as well as the successive inner layer of type III need not be thicker, with respect to current carrying capacity, than a few mu , e.g. 1 to 10 mu . Preferably, both layers, e.g. niobium and technetium, are placed upon a copper or aluminum ...

... section is circular, though the superconductor of the present invention is not limited to a circular cross section, even when designed as a tube. The outer layer 1 in the FIG. symbolizes a superconductor layer of type I or II, for example pure lead or pure niobium. Layer 2 should be a superconductor of type III, e.g. technetium, niobium-titanium, niobium-zirconium or niobium-tin. In the example shown ...

... in another coating chamber of the same furnace, niobium can be precipitated out of pure niobium chloride, upon the niobium-tin layer. The stabilizing layer(s) according to the invention and the superimposed superconducting layer of type I or II can also be placed upon a carrier, by

using a plasma jet method. Electrolysis processes are also suitable for producing the superconductors, in accordance with the present invention. Technetium, ...

We claim:

[*1] 1. An AC superconductor, comprised of a superconducting layer of type I intended for the load current, which is placed with a minimum contact resistance upon a metallic stabilizing layer of a superconducting material of type III, which during overloading absorbs the current, at least partially and temporarily, said superconductor of type I encloses said superconductor of type III provided for stabilizing purposes in the form of a tube.

[*2] 2. The superconductor of claim 1 wherein the superconducting layer of type I is lead.

[*3] 3. The superconductor of claim 1, wherein the superconductors are concentric tubes.

[*4] 4. The superconductor of claim 3, wherein at least two mutually contacting layers of superconducting material of type III, provided for stabilization, are ...

... [*7] tube upon whose outer wall the superconductor layers are placed.

[*8] 8. The superconductor of claim 5, wherein the thickness of the respective superconducting layer is between 1 and 10 mu .

[*9] 9. An AC superconductor, comprised of a superconducting layer of type II intended for the load current, which is placed with a minimum contact

resistance upon a metallic stabilizing layer of a superconducting material of type III, which during overloading absorbs the current at least ...

... [*11] III, provided for stabilization, are present which have higher critical field strengths for the alternating current the further they are from the superconductor of type II which is provided for the current load.

[*12] 12. The superconductor of claim 9 wherein the superconducting layer of type II is niobium.

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